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WINDOW TO THE FUTURE

By
PETER
WORTH



WHEN THE MOON BOUNCED

By
FRANK PATTON

The FLAME QUEEN

By GASTON DERREAUX

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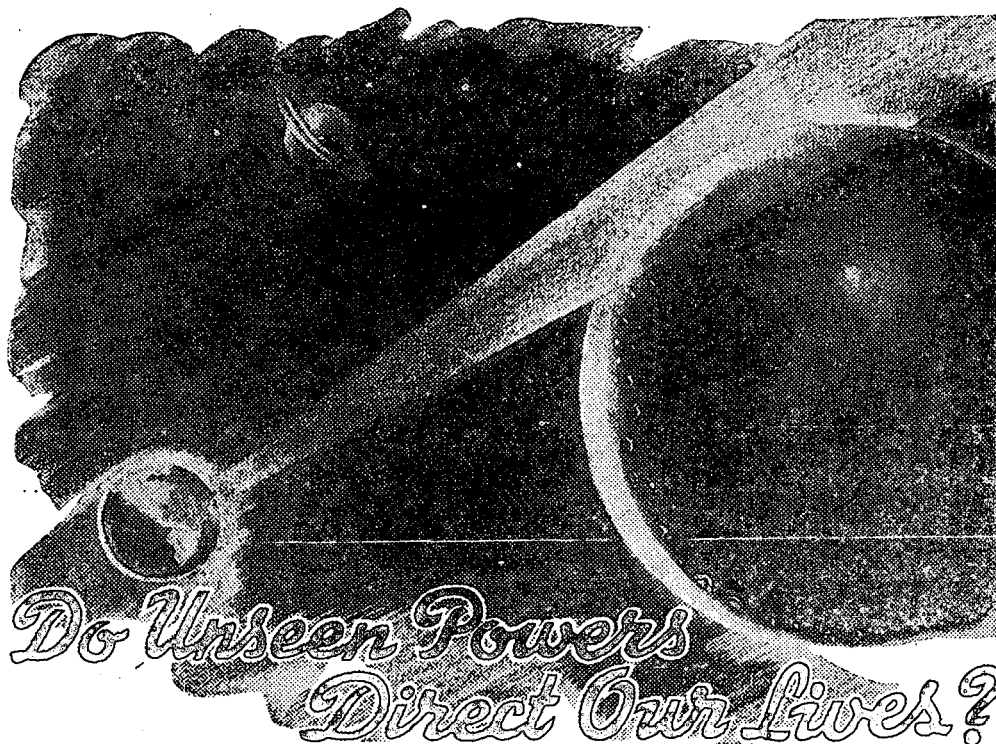
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MAY, 1949

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All Stories Complete

THE FLAME QUEEN (Novelet—32,000)..... by Gaston Derreaux..... 8

Illustrated by Julian S. Krupa

Norna 10 was her name, and she was a robot. But in every respect she was human—except her mind.

THE JINX (Short—1,500).....by Alexander Blade..... 54

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In 1945 something happened that shocked the world. Ever since, fear has ridden on our shoulders.

WHEN THE MOON BOUNCED (Novelet—26,000).....by Frank Patton..... 58

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Agos ago, says Bellamy, the moon hit the earth—and bounced! If it did, here is what happened . . .

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We've heard the last of Hitler; but have we heard the last of dictators? If not, this may happen . . .

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It was just a piece of glass; but when you looked through it, you saw something not there—yet!

Front cover painting by H. W. McCauley, illustrating a scene from "The Flame Queen"

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The

OBSERVATORY

..... *by the Editor*

THIS month we are proud to bring back the famous "Mac Girl" on our cover. H. W. McCauley, who for many years received more fan mail than all other artists combined, because of his lovely cover girls, popped into our office one day and informed us he'd like to paint a new cover for us. Well, we had a story in which a lovely girl appeared, and we let him have a peek at it. He returned a week later with the painting you see reproduced on this month's front cover, and we think it's darned pretty. We're sure you'll like it. Also, we must admit that we think this cover is a departure from our usual covers in the matter of layout. Since Mac painted only the girl, we found a lot of room for story titles staring us in the face. Maybe it's not such a bad idea at that—because it looks mighty pretty.

INCIDENTALLY, "The Flame Queen" is a story that ought to make you jump for joy. This first long story by Gaston Derreaux ought to put him up pretty high on your list of favorites. We predict that you'll see more of this fellow's stuff, and that it'll grow better and better as time goes by.

THE atom bomb has scared everybody stiff, but just how stiff is hard to tell. So we're presenting an odd little tale this month called "The Jinx" by Alexander Blade, and we think it describes the situation very well indeed. Now that Secretary Forrestal has elevated AMAZING STORIES of Number One Military Prognosticator (see the July 1939 issue of AMAZING STORIES for the complete, detailed, and 100% accurate story of the "Space Station" recently announced by him) we expect that we'll be elevated to the rank of Brigadier General at least, and no longer called an editor, but a technical consultant on long range military planning and tactical scientific warfare. Actually, however, we just point out that AMAZING STORIES has always predicted the military weapons of the future in the most accurate detail—and therefore, the blanket of official secrecy being placed by the big brass on this new story (you've got to get every line okayed before releasing) seems quite humorous to us. It's about as secret

as the Moon! As a matter of fact, the engineers can save themselves a lot of planning by studying our drawings published in 1939.

NOW, this editor wants to leap another ten years into the future and predict that the Space Station MAY be impossible. Because, we think space is very, very hot, and we think the darn thing will melt. The alternative, of course, is MAYBE the thing can be kept cool in some artificial way—and to do that, we've got to have a lot of other AMAZING STORIES predictions about ray screens, force shields and other gadgets come true. And if they do, then we're just right again! The idea of huge mirrors in space to burn cities goes back even further, to Hugo Gernsback, the father of AMAZING STORIES. Now, there's the gent who really started the whole thing. Hats off to one of the greatest minds of the century. He certainly could show the military experts a thing or two. He was developing their "new discoveries" in great detail in AMAZING STORIES when the modern military geniuses were still in diapers.

OUR next story in this issue is called "When The Moon Bounced"—and Bellamy says there is a lot of evidence that it once did! Anyway, Frank Patton (Oho, now will you look at that! He's back again! Welcome, you old son of a gun!) took all those evidences and wrapped them up in a fictionalized treatment, which has all the thrills you could want. We think you'll like this story of the bouncing moon, and you'll find that it, too, is more than just fiction. It could well be literally true. Maybe it happened just that way!

TO CLOSE up our issue, we've got "The Last Stronghold" by Chester Ruppert, and "Window To The Future" by Peter Worth. Both are rather unusual stories; the first about the last man on Earth to try to be a dictator, and what happened to him; the other about a piece of glass that had a very strange property—to see into the future. Those who looked through it beheld some rather startling things. For instance, how the next horse race was going to turn out . . . Rap.

A KILLER AMONGST US

By A. MORRIS

A FEW months ago, in a recent issue of the little magazine called the *Science Digest*, the editors of this magazine encountered an article called "Maybe It Was Murder." Like so many spectacularly titled articles we concluded that it was just a bit of sensationalism designed to attract the eye. Probably, we thought, the scarehead was just such a shocker.

But reading the article was another story. It was a revelation of horror such as was enough to chill our blood and it opened new vistas in the realm of unpleasantness. Among other things, the article told how to commit a murder without being caught!

The basic theme of the article was this: there are, each year in the United States about two hundred thousand deaths whose cause is never really investigated. It seems that there are not uniform laws in the country demanding a coroner's report on each death that occurs. Most of the time, the simplest and most perfunctory of medical reports is satisfactory. A doctor's written signature and that's all. And there's the rub.

The article cites just one case which is enough to convince the most skeptical. An elderly farmer is found dead in his bed—sleeping peacefully and quietly. The neighbors who discovered him concluded that he had died of heart trouble and that was that. But the State Police insisted (fortunately there were laws) that the body be examined by a medical examiner.

The doctor looked over the body over the protests of relatives who wanted to bury the man quietly. Knowing that he had been ailing they were quite sure that his death was perfectly natural. That is, until the doctor showed them a nice tiny hole under the man's hair in the back of his head! He had been stabbed to death with an ice-pick. Eventually the killer, a pathological specimen was rounded up and convicted.

If this was a discovered incident, think of the thousands of cases where certain death-causes are assumed, the victim buried and it's over. A great hullabaloo is made over the fact that the police are busy tracking down this and that murderer. All well and fine, but there are tens of thousands of murders committed. Only they're never discovered and they're always adjudged to be accidental or natural deaths. Since no close examination is made of the victim the matter is closed.

Science Digest is to be commended for reporting this horrible state of affairs. But they add a ghastly note to the article when they point out a few rules for sure-fire murder—don't have any witnesses, don't make obvious murder-marks, and try and make it look natural or accidental. Fol-

lowing these rules, it is assured that the murder will be a success. It would be senseless giving rules for murder if they were not already known.

Many people have come to the same conclusions as have the psychiatrists who painted the above rules. The difference is that these unknown killers stalking in our midst, have applied them. Remember again we only know about the ones which come out. But under the cover of inadequate death reports, tens of thousands of perfectly innocent people are murdered. When you stop to think about it, the possibility of this is plain. Think how easy it is to push an unsuspecting person from a bridge or into a train without witnesses at night. How many cases of suicide have actually been murder?

Your editors have been watching closely for the sequel to the story which came from Sweden a few months ago concerning the mad killer who roamed the Swedish State Railways pushing unsuspecting persons from trains! At last count this madman had killed eight people and could only be compared with the nocturnal fiend of about thirty years ago who haunted the Berlin subway system and shoved victims into the path of oncoming trains!

And so the editors feel that there are a host of pathological killers preying on innocent people, sending them to their doom, without any possibility of detecting these monsters.

There is another possibility which exists but which can hardly be breathed. Is there some alien intelligence guiding the hands of these fiends? Is there some monstrously perverted being using these murderers for some unknown purpose of his own?

Stranger ideas by far have been encountered. Perhaps some psychic involvement exists. There are so many angles to be considered that no sound judgment can be made now. The data are too meager. But that something is wrong is apparent.

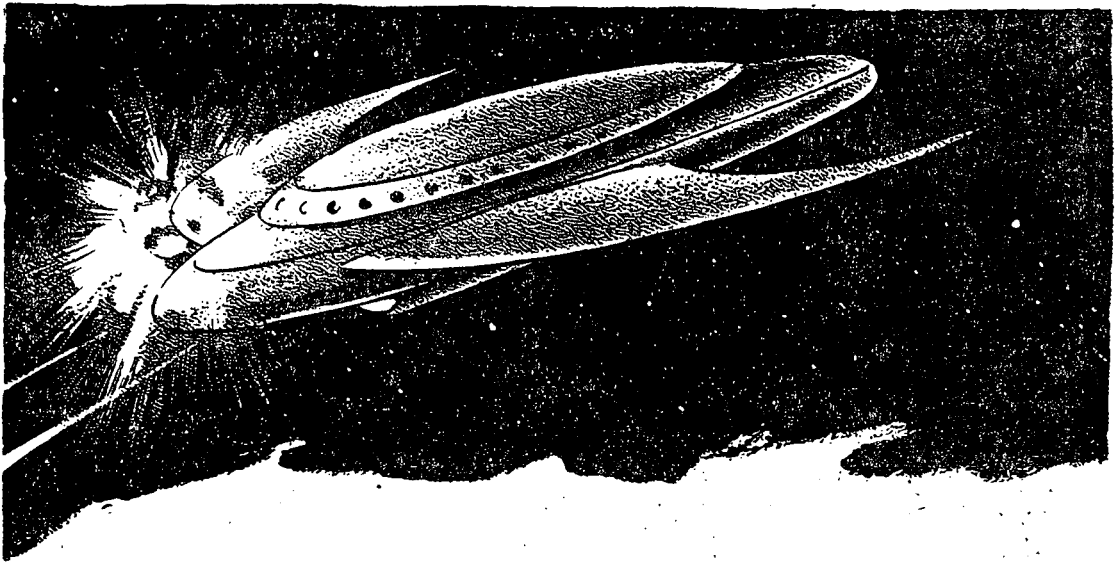
Therefore we are plumping for stronger and more stringent laws to investigate death regardless of the form in which it occurs. When Joe Blow on West Madison street commits suicide in a lonely hotel room, the police should know in exact detail how it occurred and should investigate the case to the scientific satisfaction of everyone.

That queasy, uneasy feeling that comes from walking down an unlit street late at night or early in the morning, is based on sound natural reactions, not on childish fears. Nature seems to have provided one of her mechanisms for self-defense in the form of this sixth sense. May it guard us long and well.

The FLAME QUEEN



The men manning the guns atop the temple fought the ships off . . .



By Gaston Derreaux

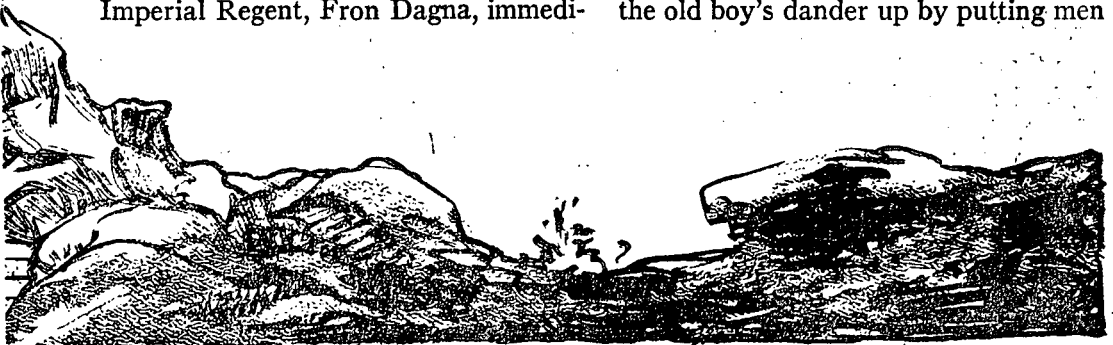
**She wasn't actually human, but she was a queen;
and her arms were lovely flames. But there was
more than beauty in their embrace—there was death!**

JAN MICKA settled himself comfortably in the toll cab as it got under way, and once again read his official orders:

"To ascertain the truth of the rumor of the synthetic creation or breeding of human-appearing robots for the purpose of warfare against the Empire. To estimate the forces needed to regulate this activity, if it exists. To report to the Imperial Regent, Fron Dagna, immedi-

ately upon arrival in Champi for explicit direction on how to proceed. The Regent has guaranteed all possible assistance of the planetary garrison in this investigation."

Jan Micka's brow furrowed in thought as he tucked the paper in his pocket. He was not exactly an undercover agent, if he had to report to the Regent. But they didn't want to get the old boy's dander up by putting men



on Conamor without letting him in on what was doing. Well, time enough for the official visit this afternoon. First, there was a personal matter . . .

The cab swung drunkenly on its two wide wheels as it negotiated the steep and bumpy grade of Poon hill. He remembered this spot; you could see the whole city of Champi from here. It was a beautiful and romantic place, and many were the evenings he had brought Wingfoot—dear, beloved Wingfoot—up here.

But for the wide curve of its Lost River, and the great whirlpool where this river sank out of sight and entered some unknown channel into the bowls of the earth, Champi was no different from most cities on the planet. A superior race long since vanished had left behind on the planet Conamor traces of a great wisdom, remnants of a painstaking machine art, legends of endless pleasure.

The seeds of that past greatness were in her people, and grew and flowered into genius occasionally, even in this City of Sin, Champi the abandoned.

Jan wondered at its wide reputation for evil. Throughout known space it was spoken of as a rendezvous for criminals, immorals and the vicious of every description. There was mystery underneath the placid surface. The women, for instance—so many were sorceresses steeped in some dark wizardry from the past, practiced and brazen in their evil. And yet, there was that about them which made them desired above all other women on the planet. Words cannot express the wonder of their beauty. Whenever the bronzed faces of space-men flushed with wine and talk, there would be mention of the women of Champi, and then a reverent silence. Too, there was a terrific lure here, some doubly dangerous vice or drug or vicious practice, which

the women of Champi alone knew and used as an art—and men who knew would not speak of it.

Some said it had to do with the secret practices of the Cult of Luana. Luana was a goddess of fertility, Jan remembered, and she was worshipped with secret, mysterious ceremonies, where all manner of physical acts were supposed to take place.

It was from this very cult of Luana that the officials believed emanated the weird threat to civilization which Jan was sent to investigate.

"Some crazy drug dream, given credence by a credulous official," mused Sub-Genro Jan Micka, of His Imperial Majesty's Intelligence, as he rolled past the drug dens that lined the streets of this part of Champi.

He got out in front of Monk's Oasis, and shouldering through the smaller men crowding the entrance to watch the dancer inside, he took his old place at the bar. The Monk, his big hairy face creased with a big smile, bent one large hairy ear to Jan's face to hear above the racket.

"Where's Wingfoot?" shouted Jan.

The Monk's broad simian face fell; his hands rubbed the bar a long minute.

"What's the matter? What's wrong?"

"She had some bad luck, Jan. You been gone two years, you know. Her Momma got sick."

"So her Ma got sick. So what, I hardly knew her Ma. What's that got to do with Wingfoot?"

"The docs, those slickers, you know how they are. They always want more money than a person has. They asked Wingfoot for two thousand di-ats to cure her mother. Wingfoot knew only one way to get it."

"Sold herself, eh? You rat!"

"I didn't have it, Jan; I had lost most of my wad in the circus. I was broke, honest. Rotten as I am, don't you know

I would have lent it to her. But she couldn't wait till I made a turn. She went to Axel's place, and he gave her money. Now she dances for him for nothing, and her Momma is in the graveyard anyway." The Monk shrugged eloquent shoulders, moved off. Jan knew he wasn't to blame. Slavery, was legal all over Conamor, and many a hardpressed citizen sold his freedom for cash. It was the last resort of the desperate.

For Jan, the glitter of the City of Sin had turned into the jingle of gold coins on a grave stone.

Outside, the double sun was sinking toward the far ruined towers. Jan whistled for a toll cab, handed the driver a re-at. The driver grinned, and thought how this officer must have drawn a whale of a pay recently.

"Axel's Place," said Jan. To Hell with Fron Dagna and his robot threat. He had to find Wingfoot first.

She was dancing languorously, beautifully, on the tiny stage, when Jan entered. The blue stones of Lond glittered in narrow bands about her breasts and hips. The room reeled for Jan at sight of her, and the old madness rose in him violent as ever. The white outlines of her body assumed an unattainable beauty; the old exquisite pain went through him with the same incredible torture of desire at the glance of her. There was no woman like Wingfoot; no women anywhere like the women of Conamor.

Her low, throaty voice, in the soft dialect of the common people of Conamor, was to him the most charming tongue in all space. She was singing a lewdly suggestive song. But that was part of the business; people came to be amused, not reformed. Jan got as near the little raised platform as he could, for the crowd, with baggy pants and glittering-handled daggers, were clustered

around the stage. The scent of bashti, the universal drug used so much here, was strong. The glazed eyes of the drug addicts fixed on her, but none with such desire as Jan. He had not realized how much he had missed her until now.

He had always taken Wingfoot for granted, with the egotism of twenty, thinking that such women were to be found anywhere. But his War-fleet had touched many worlds, and other women had only aroused in him a longing for Wingfoot.

She loved him, too, he believed. But he was a Landar, from Falron, of the military. She was but the daughter of a wild nomad from the north of Conamor, her mother a freed woman, which is one step better than a slave. Uneducated, she had grown up around the cafes and bars, begging coppers, learning to dance by watching the slave girls and imitating them to the wooden flutes of the street beggars. Monk had told him of her childhood. The Monk had given her a job to get her off the streets. Her beauty, her gamin's understanding of people, had made her popular. Her dancing had improved as her youth rounded into real womanhood. She was good for Monk's place; she made people feel at home and welcome. He raised her pay. She and her mother had enough to eat for the first time in her life.

Then Jan had come, stationed there for two years, and love had entered her life.

Then, another of the everlasting wars of the Empire had taken him away. He had been transferred to the Intelligence, and now sent here because he already knew the city and the people.

Wingfoot came directly to him after her song, threading her way through the reaching hands and proffered cups with practiced disregard. Her dark, deep eyes looked up into his, and the love she felt for him shone there. She cried, "It

has been so long, Jan, so long. I work here now."

Jan nodded. Then he blurted, "Did you have to do it? Wasn't there any other way?"

She shook her head. "I couldn't let my mother die."

"How much will it cost to free you?"

"I owe him only two thousand di-ats, which is not so much. I get some tips; I save some money. But to save so much, it will take years. It is more than most slaves save in a life-time."

"Those thieving medicoes. Taking your money and she died anyway."

Wingfoot sobbed.

Jan pressed her hand. "I know. You had to do what you could. Don't cry, darling. Tell me, are you all right? Has Axel been all right to you?"

She glanced around. "He hasn't bothered me, but I hate it here. I want to be free again."

Jan clenched his teeth, the muscles ribbed around his wide jaws. "I'll get the money. You'll be free."

Jan turned and strode out of the murky dimness into the last red light of the sinking double sun. He would have to get to the bottom of the robot business now. He had only some eight hundred di-ats of the Emperor's coin. Twelve hundred more to free the girl. Then he could marry her.

Wingfoot stood leaning against the glass-gemmed pillar, and tears rolled down her face, her mouth twisted. She knew Jan Micka was hurt to find her there—slave to Axel. Would he feel she was without honor or decency? But there was a fear in her deeper than that. She recognized that Jan Micka was here to brave the mystery of Luana. What else would bring him here again? There was no war, no other trouble, and only the young, new recruits were sent here for training. The older ones came only on some mission of importance.

And he expected to get the money to free her! No. She would not see him alive again. She had not been raised among the wreckage of the life of Champi for nothing. She knew what evil was, well enough.

Wingfoot turned, and wiped the tears from her eyes with a sweep of her hand. She smiled brightly and falsely upon a fat customer. She took the proffered cup and gulped down the fiery liquid. Life was that way, and a woman could not think overmuch about it or she would go mad.

* * *

Nalna Dagna was visiting her mother. Many years ago, there had been a scandal, and Fron Dagna, Nalna's father, had cast her mother out. Her mother had subsequently taken the veil of the temple of Luana.

Luana was such an old, an honored and inseparable part of the life of the people of Conamor, that the Regent had been forced to bow to the power of the priests. But privately, he had sworn to wipe them out. And they knew it. They returned his hatred with many petty annoyances, one of which was admitting Nalna to visit her mother. These visits she kept secret from him when she could.

Tonight, she lay with her mother beneath a great flowering vine that climbed an ancient Balbo tree, in the temple garden. The air was cool. Other of the priestesses lay about them, for the most part nude, whispering and laughing their women's secrets.

The priestesses of Luana were not virgin. Men could visit them upon payment to the priests of a sum of money. The payment varied with the demand. Some were very high. It was this part of the religion of the Temple that Fron Dagna despised most of all. But he was powerless to do anything against it. The custom was ancient and fixed and im-

mutable as the stars.

It was here that Nalna learned things never heard anywhere else—of the sins and loves and strange practices of the temples, and of the far adventuring of the space rovers who oft came to the priestesses.

Her mother slept, whether from drugs or drunkenness Nalna did not know. It was always thus. She looked forward to these visits with her mother, but the woman was always in a stupor when she arrived. That was one way the priests of Luana maintained the blind obedience which they received from their devotees—by plying them with drug and drink.

The girl's mind wandered in thought as she lay there. If only some suitor would take her away from Fron Dagna's discipline, away from the need to obey him, away from Norna 10, the new housekeeper he had brought to their home who had seemed to replace Nalna in his affections.

Nalna gazed down at her upthrust young breasts, and followed the line of her body with her finger-tips. She mused upon the power of beauty over men. She thought of Norna 10, and of the breathtaking perfection of her beauty. Perhaps that was why Nalna hated her. Certainly there was little enough other reason. The woman with the strange name waited on her, went out of her way to do things for her, but Nalna could not bear her. She felt that the calm, curiously serene beauty of Norna 10 had taken Fron Dagna's affection from his daughter.

Softly, she wriggled her supple young hips, shivering a little in the cool breeze. Why did she come? Her mother was no solace to her. Her mother was too far gone in the mummerly and the unearthly drugging practices of the temple to have a mind to her daughter.

Nalna slipped from her place under

the concealing vines and drifted out of the garden like a bit of wind-wafted mist. About her shoulders she flung the long green cape and hood with which she concealed her identity when she went to the temple. Past the ornate ancient stone-work, down the long dragon stairway with the rearing heads of fantastic threat, out into the dark deserted streets.

Two figures in black suddenly materialized from the shadows. There was no time to scream. One clapped a heavy dark cloth over her head, the other picked up her feet, and the trio soon disappeared into the shadows of the City of Sin.

* * *

Jan Micka had expected a long wait in the Regent's waiting room, and was pleasantly surprised to be shown directly to the old man's library upon his arrival. A lovely looking girl served him with a liqueur. He had hardly raised the glass to his lips when the tall, still-military figure of Fron Dagna entered.

"Ah, Sub-Genro Micka! I requested you be sent, and I am glad to see you. I have heard highly of you, you know."

"I am flattered. I can't think what you could have heard to make you think I am equal to this problem."

"Exactly why I sent for you. The opposition will not suspect you are anything but an innocent young officer. They do not know what I know of your abilities, that you have been decorated with the Imperial Star of Stars, highest award in our numerous decorations. I know how you won it, too, fighting on after your crew-mates were dead, and bringing down three of the enemy's most heavily armed spacers. Guts, I like guts in a man! And you've got them!"

Jan was embarrassed. The old man's white whiskers bristled, and the electric energy of him, the sheer aged pride of him, his acceptance of Jan as an equal

—it was a surprise when one had expected to find the usual dotard stuck away in a political pigeonhole. What a battler he must have been in his day. The action he must have seen and dominated!

"You can find out where the robots come from!—I've lost six of my best agents, and I can't afford to lose any more. That's why I sent for you. You're the type of man who can not only get the information, but can also fight his way back with it."

"Robots?"

"Norna 10! Come here and talk to the young man."

Jan thought the serving woman who had brought him his drink had been beautiful. But now, as the woman Fron Dagna called Norna 10 entered the room, he gasped, and half rose from his chair.

Nothing on all Conamor, where the women are supposed to outshine all others in known space, could have been half so exquisite as the creamy whiteness of her body. The blue simplicity of her robe draped over the breathtaking curves of her long body with a clear sculptural grace, the deep thrilling music of her every movement of her—these were beyond description. She was incredible. She was physical perfection itself. Jan's heart ached with an inexplicable sad ecstasy that this flesh must be mortal.

But was she mortal? Fron Dagna had said "robot!" His throat contracted at the grace of the long, stark white limbs against the dark tapestries of the walls; the sweet curves and planes of her; topped with an incredible flame of hair, spilling like molten lava over one alabaster shoulder.

"Tell him, Norna 10, what you are and why you are here."

Her words were startling. "I am a synthetic form of life, created by an old

scientist of the city of Conamor who is hidden away in an underground laboratory where he has worked for years on his project."

No accident of growth had marred the perfect development of her vocal chords, the muscles of her throat, the nerves controlling pitch. Her voice was a paragon of voices, infinitely pleasing. Jan listened like a man struck dumb.

"The old man created me the tenth of his experimental humans, after many years of perfecting his methods on other kinds of animals. He takes a seed of life, and allows it to grow in fluids of his own creation—and they grow more perfectly in this synthetic environment than in the varied one of nature's own design. Just as hot house plants are more beautiful than wild flowers. I am an improvement in humanity—not actually a robot.

"The old man has been seized by a criminal group, headed by one known only as The Voice. He has never been seen; all his commands are issued by loudspeaker from his secret chamber, whose location only a few of his top men know. I alone of all the professor's creations have been able to escape. And as it was Professor Metzner's frequent remark that the Regent was the only honest man on all Conamor, I fled to the great Fron Dagna."

Jan found his voice. "What do they plan to do with him? I don't get the motivation. . . ."

"That was some time ago. Norna 10 has been in my house over two years. Their motivation is obvious, if you know the details of Metzner's processes. By his methods he can produce humans, superior humans, within three years—adults! Forced growth—just as plants can be forced in greenhouses! They plan to grow their own army and educate them to be really robots which answer any command without thought

—perfect soldiers. Naturally, they also plan to sell the females for obvious purposes.

"I have tried to rouse the Empire to the danger of such a source of manpower, but they do not believe me. They think I am getting too old to be quite sane. I have sent various agents, hoping to get some action from their reports. But each of them has disappeared without trace! That fact alone has gotten me a promise of Imperial force, in the amount needed, when I find where to attack. That's your job!"

"It's a job I'll be glad to do, Your Grace, if I am able. But I could hardly get information while wearing this uniform."

"Exactly why I sent for you. You're going to be disgraced publicly for conduct unbecoming an officer. That medal will be taken from you, your stripes torn off your shoulder. You are going to be punished as no officer ever was in Champi! I think they need fighting men to lead their mindless freaks. They'll snap you up, once you are known to be available—and with a score to settle with the Empire. You are going to pretend to hate the Empire!"

"It is such jobs that need guts, Micka! You are the man for this job. I have picked you carefully. And I believe in you!"

* * *

So it was that the garrison of Conamor was assembled in parade on the great field beside the Lost river, and reviewed by old Fron Dagna, straight and proud and fear-inspiring in his anger as he denounced, among others, this Jan Micka, who he claimed was no longer fit to wear the "Star of Stars."

"You have forfeited every honor looked up to by civilized men! You have proven yourself lower than the beasts! In attacking a superior officer

without sufficient provocation, in denying the loss of monies entrusted to you, and in your subsequent behavior, you have shown yourself no longer worthy to wear the Emperor's uniform."

His voice harsh and ringing with anger, Fron Dagna tore the brilliant little medal from the breast of Jan Micka. Publicly, before all, his uniform was stripped of all identification with the Empire's warriors, the rank insignia and the service stripes—and Jan could not help flinching as one by one the proud emblems were torn from his tunic.

"Sentenced to hard labor in the military prison for the period of five years!"

As pre-arranged, Jan escaped from the prison shortly after his incarceration. Now that he was a fugitive, the people who were manufacturing the synthetic army of robots were supposed to contact him. He was a top-notch fighting man, and supposedly in disgrace with the Empire. What more natural than that the criminal group hire him for their purposes?

Wingfoot was to be his contact. His affair with her was publicly known, and the old Regent believed that in due course they would reach Jan through her.

Wingfoot had to seem very secretive about seeing her Jan. Something in her exulted at his fall from honor and pride, even though it was only make-believe. Somehow, she felt, it brought him closer to her; now he could understand how it was to be lowly and outcast. She would slip out the back door of Axel's place, past three doors in the narrow alley, and there in a ruined dwelling he slept. She was to go to him often, and that suited her heart. It was good, also, to feel that she, too, could work against this menace to the Empire, and to feel

that she could help Jan in his job. She was listening, now, for any information she could get regarding The Voice and its whereabouts, its strength.

And at last she had learned something to tell Jan. She completed her dance in a mad swirl, and lay for a moment outstretched where the violence of the last movements had flung her on the stage. Then she gathered up the coins swiftly, bowing and throwing kisses to the customers, and darted out the rear entrance. For at least five minutes no one would shout for her, thinking she was resting and changing her costume. Her naked feet pressed the cool stones gratefully, the evening breeze was ecstasy on her moist skin.

Jan stood up, his broad face a little sullen; but his arms glad about her, his lips fresh and clean and all hers. She related: "The Regent's daughter has been taken. It happened the same night you were there to see him. . . ."

"Wingfoot, I wish to Heaven you were not a part of this. I am afraid for you, my beloved."

"Oh, Jan darling, let me help you in the only way I can. It will go right, have no fear. It must go right."

"Now Jan, listen to me carefully. There were two men at Axel's tonight. They sat near the stage, and spoke confidentially, yet made sure I alone could hear. I am sure this is the way they mean to reach you."

"One was telling the other how to find the habitat of The Voice."

Jan's fingers clenched and unclenched. His eyes reflected the eagerness with which he had been awaiting some information to enable him to get started.

"You go to the place where the Street of the Fountains crosses the Way of the Horses. You know those ancient streets, in the ruins that are not rebuilt?"

"Not well, but I have heard of the Way of the Horses. Some of them are still standing. Your cab-men always show tourists the Horses, huge ancient things, with horns like Unicorns . . ."

"That's it. Not far from the big Temple, the one with the great dragon stairway, you have seen it?" Jan nodded, it was a landmark.

"Where the streets cross, there is a wide square, with a Fountain of Horses. It is the only such fountain in Champi. You go up the old Way of the Horses, and there is one gigantic tree, a Cymrol tree. These are most rare. They carry great green balls of needles, and it would take a dozen men to begin to reach around the trunk of one tree. Under that tree is a house, the house of The Voice!"

* * *

Jan tucked the thin, long-handled air-gun under his arm, clasping the catch about the breech so that it could be got out at a tug. The magazine was full, near a hundred of the tiny explosive darts had been inserted. It was a good gun, the kind a man needed for this sort of work—flat, unobtrusive, always ready, and always full of death. He tightened the wide dark sash about his waist, pulling the baggy breeches high, and the ornamental dagger well back out of the way.

Through the dark deserted ruins, toward a certain dark doorway which appeared, to the casual eye, as just another deserted ruin. Jan stopped before the door under the mighty Cymrol tree, with the two great shrouded figures at the door sides. After a moment, he pushed open the sagging metal door with the cryptic forgotten symbols engraved on it. Inside, it was black, cold, forbidding, smelling of age and dust. Jan moved into the darkness, feeling with out-stretched fingers. He started as his fingers touched warm,

yielding flesh. The silence stretched out. Jan flipped out the air-gun, pressed the sight ring into that flesh he could not see. Then he reached, tracing the outlines of cheek, of soft ringlets, of tapering throat, and round, smooth, naked shoulders. He stopped short of the swell of the breast, as from the dark, came a giggle. Jan cursed with relief, laughed in spite of himself.

"You have the better of me, woman. You can see, and I cannot. What do you here?"

"Won't you sit down. I, too, await The Voice!"

Jan marveled at the young voice, so full of confidence and sounding so amused here in the dark.

"Who are you?" Jan asked again.

"I am not telling who I am. Would you answer that question?"

"I will leave, and come again when it is more private."

"No! I have been waiting for you. We knew that you were coming. The Voice will explain to you in a moment."

A deep, far-off hum came into the room at this moment. "Jan Micka, cast out of the Imperial Landars, disgraced, before all Champi! What do you want here?" The Voice was deeply masculine, evidently calculated to impress, giving a sense of detached omnipotence. Jan smiled a little at the mummerly.

"Chiefly, I want twelve hundred di-ats of the Emperor's coin. I want to buy a certain woman's freedom." Jan spoke the well rehearsed words in a voice strong and confident. The darkness had grown less dense to his eyes, and he made out the soft outline of the seated girl's figure, bent forward, her eyes upon him, glistening with a certain over-appreciation of his size and strength and looks. Her lips were rich and full and dark red, her milk-white teeth perfect, her eyes deep and lumin-

ous, her body round and strong. Her eyes were over-wise for Jan's taste, and he wondered just what she might be, what she must know.

"We know you need money, Micka. That is why we are offering you a chance to join up with us. Agree to do our bidding and keep your mouth shut afterwards. We are not bad people to work for, and you will have many times over twelve hundred di-ats. The girl will guide you in your mission tonight."

The girl nodded her head, murmured, "They are reliable. You can trust them. I have worked for them for years. You need have no fear."

"I have little choice. You know I have to stay out of sight of the Military police. I have to work for someone like you who has no contact with officialdom, that is obvious." Jan was waiting, talking to draw them out.

"Then you agree! After you have completed your first work for us, you will be immediately paid, and when you need it there will be other jobs. As we grow better acquainted, there may be some very big goals for you to attain. Good luck! Jan Micka, go with Luana!"

Jan noted the use of the Conamoran blessing, habitual and inevitable among natives. It could mean nothing, or it could mean these men of The Voice were connected with the Cult of Luana. It seemed the most likely place for a hidden organization to develop. Among the mummeries and robes and secrecies of the Temples, anything could be expected.

There came again the distant deep hum, and The Voice was gone. The girl rose, gliding through the dark, and Jan caught up with her where she emerged from the dark shadow of the ancient tree.

"What is this job we are to do?" asked Jan, as if "jobs" were everyday

occurrences to him.

"I would rather show than tell you. You will probably back down when you know what is required." She looked at him appraisingly, daringly. And in that look, her nature was revealed to Jan—the fire, the vaunting, the ambition of one for whom the world has never enough to offer.

"Where are you taking me?"

"We are almost there." They passed a series of dimly lit entrances. Then she glided up a passage between two of the great old buildings, restorations of the original mighty dwellings of the past, and they came out into a walled garden, breathing the scent of flowering shrubs, tall plumes of the malbo nodding overhead, a fountain playing softly. The girl paused, looked about, but there was only silence and no life. She glided swiftly ahead, keeping to the shadows. Jan followed her along the heavy ancient wall, feeling about in the dark. Then she turned to him, her face a white patch with the only splash of color the full dark lips.

She pressed sharply against the ancient rock in a series of movements too swift for his eye to follow. Suddenly a square opening appeared as the heavy rock pivoted inward with scarcely a sound. Jan scrambled after her slight figure through the waist-high opening, she swung the pivoted stone behind him, and the entrance was sealed.

"This is one of the entrances to the forgotten passages that underlie the whole city. They are known to but few. By their use, our task is easy. Follow me—"

She struck a light, and the flame flared from a tarred reed torch. Jan saw that a bundle lay along the wall. He picked it up at a motion from his guide.

"Why should these people have a need of me?" asked Jan, quietly, to see what lie she would make up.

Her answer confirmed old Fron Dagna's shrewd deduction. "We always need good fighting men. This is perhaps but a testing of you, how should I know? But you will learn all that, later. Come along."

Jan suppressed an impulse to hush her penetrating, confident voice. This rock would let no sound through; it was solid about them, not built now, but hewn through the bed rock of the city. Downward at a steep incline she walked, and then upward again. She paused at last before a dark chamber, the ornate ancient work about the door spoke to Jan of the people of the past, and he lifted his torch to throw light within. The girl went in, saying, "Here has been one of my secret hiding places since I was a little child. Here I came to weep my heart out because I was not a princess, as all the story book girls are."

On the stone floor was a bed of dried grass. Hanging on the wall were some worn female garments; candles were piled in a niche; there were some dishes holding dried grapes and figs.

"Here we will hide afterward, so mark the passages well. It is easy to miss your way. We may have to spend some days here till the first search is over."

"You've got it all figured out, haven't you? And I still don't know what we are going to do."

"We are going to take a woman out of a rich man's house. It is very important that we succeed. You will see. We must wait here until the second hour of the morning, when all are asleep."

The woman glanced at a glow-roll on her wrist, and Jan marked that they had yet another hour. The little circling, glowing suns on the cylinder had just passed the mid-mark.

"We have some time to pass then. Perhaps we can start by your telling me something about yourself." Jan did

not even know her name. There was a curious tension about her, a drive, an adventurous enjoyment of the situation and an amusement at him that he could not quite fathom.

"I was born in a Temple of Luana. You know the customs of the temples?"

"Something I know. Not much. I have been in two of them."

"I never knew my mother. I go by the name of Evano. I escaped from the Temple into these passages, and I lived here for years, stealing my food in the night and retreating here. I found some of the treasure that is always being hunted, the gold images you have perhaps heard about. I attracted the attention of The Voice, and since then I have done very well. That is all you need to know about me, isn't it? Does it help you, Jan Micka?"

"You mean The Voice took your treasure from you and made you serve him by force, don't you?"

She laughed. "No, truth to tell, I found quite a lot of gold, and lived pretty high for a while. But, of course, as soon as I showed in the marts that I had found ancient treasure, I was hounded night and day till my secret was found out."

Jan nodded. "Any one of those ancient objects is worth a small fortune to collectors. It is a wonder you were not knocked on the head, taken to some hideaway and tortured to tell where you got them."

"I was so taken! I told, and they let me live. It was the men of The Voice." She settled back against the straw, crossing her shapely knees and twisting her young mouth into a grimace of gravity greater than her face seemed to permit. Jan's heart warmed to her against his will.

"I was lucky," she went on. "Lucky that what I found was not more than it was, and that I did not succeed in sell-

ing it unobserved. I would have been rich. It is very unlucky to be rich in Champi, the City of Sin."

"How so?"

"I know what happens to suckers with much gold, Jan. There is no escape for them. They are plied with every temptation, drugs are slipped into their wine to inflame and madden them, their wits are subtly stolen from them by poisons. Their wealth melts away, leaving them in the end broken in mind and body, unable to say their own names, at the last. No rich person is safe who has not a trained organization of fighting men always at his command. Even The Voice never drinks any but his own wine, and that tasted thrice. Wealth is a sentence to madness, on Conamor."

"I knew there was corruption, but you paint a dark picture."

"I am only telling you what your Empire—the Empire that you served so loyally and that repaid you so shabbily—really is! This system of grabbing wealth in the shortest way possible is in truth that Empire! The real power of the Empire are those who have worked out these methods for centuries. The aristocrats of Falron—they are the real lords of crime in the Empire. And only those families escape and keep their wealth who are a part of the inner circle. It is they who protect their own, and fleece all others as quickly as they can. And they can do it without loss of time, believe me."

Jan realized how she was leading the talk toward destroying any last, lingering loyalty to his Emperor, blaming all the corruption of the whole Empire upon those very people he had once sworn to uphold. He saw how shrewdly old Fron Dagna had guessed their intentions.

"It is only little men who do not know such things, and who keep the corrupt in power with blind loyalty." She smiled

at him, a sweet, sad smile, as of one who has looked upon life and found it bitter. She was clever, and Jan knew she was well chosen for her job. He himself almost believed her!

Jan glanced at the glow-roll on her wrist. The cylinder had slipped around surprisingly. He held up two fingers to apprise her of the time. She leaped to her feet with a little exclamation, and turned her back to take from the wall a dark garment which she handed to him. She slipped over her own head a veil of black embroidered lace which, with her dark gown, made her nearly invisible. Her slim, strong calves protruded ludicrously from beneath the gown, and Jan pointed to the white flesh. Her eyes darted about, and found a pair of black hose which she slipped on.

"You won't turn lily-livered on me, soldier?"

Jan shook his head. "No, I am going through with it. I have to make a living some way, and how else can I without revealing my whereabouts to the M.P.'s?"

"A man must die, come soon or late, what is the difference? One doesn't live long, and if one does not do what one desires, what good is it to live?"

"Are you winning what you desire, this way, Evano?"

"I will, or know the reason why!" Her voice was a curious mixture of hardened resolve and youthful dissonance. Jan realized she was much younger than he. Only a very young voice would break like that.

Within short minutes, they were peering out from a chink between the stones upon a gallery within some great house. The place was darkened, and Jan could see only dimly the soft surfaces of rich carpets, the gleam of polished hardwood, the rich atmosphere of luxury. Evano prowled on ahead, still within the walls of the house. She paused

again, listened for long minutes with her ear to the wall, then pressed the pivoting stone outward. Jan saw fresh grease upon the bearing planes of the rock.

This young witch was one for efficiency, he thought admiringly. Somehow, he could not help but want her to succeed, realizing that failure could mean death for her. The police of Champi were not renowned for mercy, nor would The Voice be gentle with her if she erred in his orders.

They passed along a short high gallery, overlooking a kind of conservatory with glass-paneled walls on one side filled with exotic plants. Heavy shadows lay in great pools beneath the gallery running along the tall tree-sized plants. Anyone could have been hidden there, and they would not be seen. Jan's flesh crept, expecting a bolt from the floor beneath. Surely there were guards in so rich a house!

The dark figure of Evano was bent before a door near the gallery's end. It opened under her swift fingers which were plying a set of little triangular tools.

A low light burned within the white-draped chamber. The wide bed was canopied with gleaming silver cloth, and the rugs were soft and yielding underfoot as Pandar fur.

The coverlet itself was a silken, glowing green, figured over with arabesques of gold, and those arabesques were mingled strangely with the sprawled curlings of a woman's hair. Her face was still as death, the nostrils seemed not to move, and Jan stood with his own breath frozen in his throat with surprise—with the realization that this victim was Norna 10! No other woman he had ever seen had such beauty, such weirdly perfect skin, such perfection of neck and shoulder and arm, such vivid bronze-curved hair.

What a trap he had managed to blunder into! He was stealing away the only evidence the Regent had of the existence of Metzner and his growth methods! For a long minute he stood frozen, Evano's eyes on him, while his thoughts boiled as he sought a way out of the impasse. He could not do this to Dagna, who had lost his daughter to the enemies who held Metzner. He realized now that they must have made demands upon the Regent based upon their possession of his daughter, and been refused. This was another blow to bring the old man to his knees—the only man they feared, and the only man who really understood the importance of the existence of Norna 10 and old Metzner, her creator. He could not. He turned to Evano and seeing his face she flashed a hand into her bosom and pulled out a needle gun. It was a small edition of the type of gun he carried, except that he knew they used a poison needle instead of explosive darts, like his own. She was prepared for anything, that girl. He pulled himself together, muttered, "It is her beauty, Evano. There never was a woman that beautiful!"

She did not answer, but nudged him sharply, and Jan bent, sliding the coarse cloth in his hand under the clean column of her neck, ringed with slender golden chains that seemed to him to symbolize her coming bondage to The Voice.

One swift movement, and as she opened her mouth to cry out he knotted the cloth, shrinking from the thought of what he, Jan Micka, was doing to a defenseless woman. And as he pulled the grey cloth more tightly, the perfect teeth champed once in desperate straining on his hand, drawing blood. Then she relaxed, letting him work unhindered as he bound her wrists behind her back. His will strained not to regard the utter beauty of her flesh under the sheer

silk. Her eyes flamed at him, in fear, in despair, and with a devouring curiosity. Jan saw she recognized him, and that she must have realized what he was under compulsion to do.

Jan swung her to her feet, draped his own dark cloak that Evano had given him, about her shoulders, dropping the hood regretfully over the perfection of her straining face, hiding the coarse gag and the translucent pale rose and ivory of her skin.

Evano waited, watching out the door now, with the little needle gun still venom in her hand. She glided soundlessly out, and Jan half carried, half forced Norna 10 to walk beside him.

They moved along the gallery above the shadowed indoor garden, and Jan watched Evano's dark shadow ahead in the dimness touch the turning stone and disappear. He passed the tall unresisting form of the woman through to Evano, and turned to back through the slit, when a ray-bolt from a guard's rifle hissed hotly against the stone by his hand.

Jan fell flat, cursing softly, his hand seared by the heat of the bolt. Did he have to kill that man, before he had time to call out? Was his mission worth killing honest guards? The decision was hard, but his hand darted to his gun without seeming volition, and he scuttled forward to the grillwork of the balcony railing, on all fours, and saw the darker shadow of the guard who had spotted them. The shadow moved smoothly around the fat bole of a dwarf Vibrun tree below. He could not have seen plainly what was going on, or how many, but had probably noticed the glitter of Jan's dagger handle through the grill work, and seen the black opening in the wall where there should be no opening, and fired. Now he was running forward under the cover of the trees to get a clear view of the opening. Jan

swiveled his head, saw that the rock was slowly closing behind him.

Jan held the sight-ring squarely on the target, and as the man stepped out he depressed the sight and fired at his feet. The sharp explosion threw him back, kicking as he fell, trying to crawl backward out of sight. The soles of his boots were blasted off, there was blood on his feet. Jan scuttled back crab-like, feeling with his feet for the opening, and a sudden sense of failure struck him when he failed to find it.

"That subtle minx," Jan raged inwardly. She had seen the attack, and had fled with her prize, leaving him to his death. Desperately, his hands scrambled over the ancient enigmatic stones, seeking the secret of the forgotten levering key stone. Beneath, there came sudden light, racing feet, sharp cries. Even as he despaired, and turned away to surrender before they blasted the life out of him, the stones murmured greasily again, and he dashed through.

Evano pushed the stone behind him calmly, smiling with her too-wise mocking lips. Without a word, he followed her, and the cold sweat on his face chilled in the dank passage. But whether he had passed her watching eyes, whether she had seen him depress his fire and fail to kill the guard, or whether she still thought him reluctant about taking Norna 10, he could not tell from her face.

"Thanks, you saved my life. I thought for a second you had abandoned me!"

"I was startled by the first ray-bolt, and when you fell to the floor, I thought you were dead. I swung the door closed to escape detection, but then I heard your answering fire and waited till I heard your hands seeking the opening. It was the only thing I could do. This was a close call. I only hope we escaped their eyes."

"They were looking about the garden, the last guards who came running. The one I fired on lay unconscious or hurt, he did not direct them toward us. But another minute, and they would have spotted us."

"You didn't kill the one who saw?"

"I doubt it. Perhaps. These explosives are powerful."

"Yes, they make enough racket to bring the whole city down on our heads. It is not a weapon I would choose for prowling."

They walked beside the captive, disregarding her for a moment in their excitement and in their effort to put as much space as possible between them and Dagna's house. Jan stopped, undid the knotted cloth about her neck and mouth, let it fall on her smooth throat. Her burning eyes on his missed nothing of what he did, or what he thought, Jan suspected. They went on again, Jan keeping the binding about her wrists in his hand. He did not want to have to race after her; she had legs as long as his own.

At the thought of her legs, his eyes drifted like moths drawn to light-flame where her thighs swelled and moved and the blue night robe told of the glory beneath. In his mind, the eyes of Wingfoot seemed to watch his wayward thoughts reproachfully. There were tears in Wingfoot's eyes as he had seen them last.

At the door of the chamber where they had waited before, Evano stopped, saying: "I must leave you for a short time, to consult as to what is to be done with her. I fear you may be unable to resist her charms; she is so very beautiful and she affected you so at first. Just remember that if she escapes, I cannot save you. The Voice will kill you, Jan Micka. This is your test—"

"I'll keep her safe," murmured Jan. But a weird thrill rose through his limbs

uncontrollably. To be alone with this inhumanly beautiful creature—no man could resist unless he had more than normal will.

Evano moved off into the dark, her light flickering out of sight. Jan turned to the tall enigma beside him, who had not spoken.

"Well, here we are, beautiful. It would help to pass the time if you told me a little more about your creator, the old scientist Metzner, and of other things."

She did not answer, but looked about the bare rock room with a cool, detached and curious eye. Then she sat down gracefully upon the grass bed of the Temple girl Evano, and turned her eyes upon Jan, searching his face, seeming to count each line and scar and shadow, then upon the wide shoulders and strong, brown, hairy wrists and hands, noting it all, and neither approving nor disapproving, but measuring him. At last she said, "You should not have done this."

Her voice moved Jan; it was a match for her eyes, cool and lovely and balanced. Not husky like Wingfoot's, or youthful and hard like Evano's, but a woman's full contralto, rich with musical undertones, arousing a man to more than Jan cared to be aroused at that moment.

"You must trust me, Norna 10. I do this as part of my job."

"It is not wise. I am the proof Fron Dagna needs to get help."

The fact that Evano had gone off and left him with Norna 10 struck Jan as a trap, or he would have released her and pretended she had escaped. He surmised they waited to grab her and shoot him down after he had fallen for the ruse. Unless Evano had personally decided that he was really on their side and could be trusted—which did not make sense, for she had seemed

to distrust him, with her venom gun constantly pointed at him.

Well, they would not learn by this ruse, he decided, for he felt it would mean death for him to release her and remain himself.

A whisper of some eerie thought came from her mind into Jan's, and he shivered a little, watching her face there in the dimness. She was not human, and a vast curiosity as to what went on inside her head consumed him. Was she only seemingly greater—or really a kind of Goddess, an infinite improvement on the human race? A hunger for her burned uncontrollably higher in him, and he leaned forward, all the man in him drawn to her, and all the good in him holding back, the eyes of Wingfoot reproachful in his mind.

Norna 10 looked back at him with a cool compulsion toward sanity in her wide green eyes, and Jan turned his unavoidably hot eyes away, embarrassed. A man could not help desiring this woman.

"You are very tall, for a woman," Jan mused aloud.

The weird silence of the place echoed his words again and again . . . "for a woman . . . woman . . . woman . . ." Jan shivered, for the echo reminded him that this beautiful being who was so much woman, was yet not woman at all.

Her eyes were warmer now, and she smiled slightly upon him, as a mother would to a child. Jan felt ashamed and youthful before her lovely eyes, and there was a strange quality of awe in him, as he sat in the silent dimness of the dying torch.

Jan rose, stamped out the fire, lit another.

"If you could loosen my hands, the blood would circulate better." She was wholly at ease, and turned her back to him. His eyes slid down her arms to

where the perfect ivory flesh was em-purpled, and his heart began to thump unbearably as the room reeled with his ecstasy of merely noting the smooth movement of her back muscles, the arch of her hip, the serene purity of her neck. Jan swung the ancient battered metal door shut, placing his back against it, then loosened the bindings about her wrists and took them off. He pulled a wooden stool to him with his foot, settled down upon it against the door.

She turned away, stretching for a moment on tip-toe, the torch light caressing the sweetly curved lines of her body. The grace of the woman ran like a song through her movements. Jan's senses ached as he devoured her with his eyes, trying not to lose control over his desire of her more than humanly exotic figure. This rapture his senses promised, this alien overpowering desire, was not for him. He was Wingfoot's man, and he must desire no other woman while he loved her simple true soul and dancer's body. But this Norna 10—!

Time dragged along, and Jan wondered how he could keep from falling asleep. He dreaded the thought of binding her feet and arms if Evano did not return soon.

Jan nodded, awoke suddenly, caught a glimpse of the perfectly molded figure moving swiftly toward him. The blow descended before he could think to avoid it, and a mountain of star-dust exploded into a nova on his head.

* * *

Norna 10 walked quietly through all the flurry and excitement of the city wide search for her, and turned in at Fron Dagna's residence.

* * *

Evano, returning with the dark robed priests of the Temple to relieve Jan of his burden, found what she at first

thought was an empty room. The tall, swarthy leader of the priests snatched from her hand the gold which she had demanded in advance. She cursed as she saw the smear of moist blood upon the floor, saw behind the door the slumped unconscious body of Jan Micka. She noted his unrumpled tunic, bent and felt for his gun under his shoulder, pulled it out and held it in her hand. Rage filled her; she almost blasted away at the body with his own gun. His incompetence—or was it treachery, concealed by a bump on the head—had done her out of a fat piece of money. It was not often The Voice offered a thousand di-ats. . . .

She kicked the prone body, and Jan groaned and tried to sit up. He felt for his gun, seeing the furious faces of Evano and of the swarthy priests about her.

"You begin your work with bungling, my fine fool!" she gritted, holding the gun on him. The tall priest bent down, put one powerful hand under Jan's arm pit, hauled him to his feet. "That is the first and last time you work with Evano," she hissed in his ear as they thrust him out the door. "I hope they give you the *seeing* death!"

Jan did not struggle; the futility was all too evident. Norna 10 may have figured a bump on the head would exonerate him—but she had apparently figured wrong.

Mile after mile they trudged. It was hard for Jan to keep up. He was very weak. Norna 10 had not stinted her blow. His head throbbed like a burnt out turbine bearing.

"Where are we going?" he asked.

"To a place where you can be alone, you like to be alone so well!" growled the tall priest.

Jan was not surprised when The Voice came to them, humming louder and louder just over their heads: "So

the big soldier boy could not handle one woman. Evano, you were sure he was on the level. Do you think so now?"

"I think he is either a damn fool, or an agent for Fron Dagna. What else?"

"Next time I send you on a job, you will not leave your work and come to be paid in advance, Evano. This is the last time I bargain with you. After this, you take what you get, like the rest."

"Yes, Master, I have learned my lesson."

"You will not learn it twice, Evano."

Evano did not speak again, and the bodiless sound went away. Jan was not mystified by the phenomena. It was some adaptation of rays to the carrying of a voice. He was used to ray-screen vision on the Emperor's ships, knew it as a survival of ancient science, realized that this "voice" phenomena was another of the ancient secrets rediscovered.

They passed a male guard, standing stiffly before a locked door. Jan's eyes bulged. This was the threat the old Regent feared—synthetic soldiers! The guard was inhumanly flawless, and as they passed him, his eyes followed them incuriously, with a blank stare. He carried a long silver rod, an unfamiliar weapon that seemed very fragile to Jan. He wore only a kilt belted about his loins. He bore a certain resemblance to Norna 10, but his face was empty of any expression. The courage and character that animated her was not present in this soldier. Jan understood that this "synthetic" was produced for one purpose only—war, and that his mind and nature were blank of all human emotions.

Jan, Evano and the priest pushed through a throng, in which soldiers were interspersed with female figures. All were "synthetics." All were silent. They all moved quietly and rhythmically, their faces set and empty. Jan

shuddered as he realized what they were—shells—empty cases of flesh, containing only the apparatus of nerves and thought necessary to obey commands issued to them.

Now, the trio passed through a long chamber, where the syntho-warriors slept in tiers of bunks, their bodies motionless as stone, and only the gloomy silence—not a laugh, not a whispered word, not a human reaction among the hundreds—just silence and sleep and waiting for the command to kill.

This was evil, Jan felt, a deep evil which the race of man must fight to the last ditch.

They entered a large elevator, and ascended for long minutes. They stepped out into a luxurious chamber.

Jan faced the sleek, long-bodied personage leaning toward them across a crystal desk. When he spoke, Jan knew he faced The Voice. This, this black-mustached dandy, with his deep-set mocking eyes, long bony face, elaborately curled hair long upon his velvet shoulders, one jeweled hand toying with the papers before him, was THE VOICE!

"Jan Micka, do you realize you have made a nuisance of yourself?"

"She got the better of me! How did I know a synthetic was so damn strong? Next time, I'll know what to expect."

"There'll be no next time for you, Micka. I think you're an agent of the Regent's, that your expulsion and disgrace and imprisonment and escape and all the rest of it are a fancy trap to place a spy among my forces. I should kill you out of hand . . ."

"But later events may prove he is not a spy, and we can always use a trained spacefighter, a man that knows an atomo-turbine from a z-ray cannon." Evano's voice cut into the man's.

He looked at her a little irritated. "You still think he is on the level? Well,

I'll make you a wager, Evano, he is a spy! When it's proven, you can die with him, as you're so anxious to keep him around."

"And if he isn't, Master?" Evano was purring like a Pandar cat, angry but nice.

"You can have him, with my compliments."

"Taken," she gritted, smiling but pale. "I think he will be fun, under the influence . . ."

The man's eyes shot her a glance of peculiar meaning, half furious, half reflective of something that she had implied. It was evident there was something between these two that was beyond Jan's experience. Some dark brand of dissipation, some kind of contest, not love, not hate, not rivalry—but some long understood opposition tempered by something closer, as if she had once been his light-of-love and had turned from him, and that now he had difficulty in controlling her. Jan knew she had only spoken for him to exonerate herself of misjudging him, believing that he would with opportunity prove that his failure was a fluke.

From beneath the milky, opaque, crystal top of the desk, the man pulled a heavy short-nozzled heat-ray, chased and damascened with gold, a rare original antique of the old work. The sight of the deadly thing sobered Jan. He stood rigidly eyeing the round nozzle that stared at him from the slender hand.

"You are a prisoner of a war not yet begun. We usually kill out-of-hand anyone who blunders into our affairs. I make an exception in your case, because the circumstances allow doubt that you intend us anything but friendship. But one false move, my blundering friend, and you will learn all about death, and for a spy, that is not a short lesson.

"Put him away with the old treasure who has meant so much to us," he added to the tall robed priest, turning away. Evano crossed the luxurious chamber and disappeared between the plates of an exhilarator, sighing with relief as the weariness left her limbs. The priest shoved Jan back into the elevator cage.

Jan wondered what was meant by the old treasure. He had not long to wonder, however, for he was soon shoved into a steel cell. There were two metal bunks, four walls, a round vessel of familiar nature, and one old man. He was thin, bent, pale and entirely harmless looking. There was an upstanding fringe of reddish hair around his bald head, that surrounded that white smooth expanse with the combative aspect of a barbed wire entanglement.

"Been in here long, Dad?" asked Jan, foolishly, for the worn shoes, ragged clothing, pallid skin, all bespoke years of confinement and poor food.

"Years, I think. I don't know, rightly. The dirty devils! What'd you do to 'em? Plenty, I hope!" His cracked old voice touched Jan's heart.

"You're not Metzner by any chance?" Jan was incredulous. This little old man did not somehow look like a wonder-worker.

"How did you know? Are you . . . no, that's impossible."

"Maybe not so impossible as you think, Prof. Metzner." And Jan told the old man all about Fran Dagna and Norna 10, and how he came to be in that cell.

"Tell me about the robots, Professor."

"They're not really robots. They're a special kind of life, a special mixture of nutritive formulas which accelerate growth in animal tissues, which I have learned to use to produce a miraculously rapid growth of the embryo from ovum to adult. They are really a basic

improvement of the original pattern of man, produced by vastly improved growth conditions. But they are not robots, though they will be in the hands of this Temple bunch."

"I'm pretty ignorant about the Temple bunch, The Voice and his gang. I would like to take them apart, Metzner, but I don't know the combination. Tell me anything you can about them."

"How could you hurt 'em, locked up here with me? Who are you, anyway? How do I really know you're not a stool pigeon for The Voice, put in here to see if there is anything else I know they can use?"

Jan grinned, trying to reassure the old man. "You'll just have to trust to luck, Dad. You couldn't be any worse off than you are, could you?"

"No, the greatest wrong, a catastrophic replacement of man-power with this synthetic human, will take place unless something very fortunate occurs. It's up to us to make it occur, no matter how impossible it looks. You're right."

"Well, tell me what you know."

"The Voice—you met him?"

"Sure, just before I met you."

"He put you in with me. That is strange; he has always kept men from seeing me. Why?"

"He thinks I'm really an outcast from the Imperial Space Navy. Actually, I was sent here to learn about the rumored robot threat. He thinks I will learn the necessary facts from you, and be useful to him when the fighting starts. He is just disciplining me for a little blunder I pulled in letting Norna 10 escape."

"Norna 10! You knew her? How is she?"

"She is beautiful—a goddess. As my first act for The Voice, I had to abduct her. She escaped . . . left me with a knob on my head."

"And he threw you in here as a punishment for your carelessness."

"You know, there is something sinister behind The Voice and his men, something beyond the theft of my robots. There is some age-old vice, some terrible sin, which has lived in these Temples of Conamor since earliest times, and there are things which go on in the indulging of physical pleasures which are beyond description."

"If you were a native, you would understand. It is an ancient ceremony to worship the Goddess Luana. It is a most holy ritualistic secret, which only the inner ring of devotees ever learn. It is an evil thing. I think I have an inkling of what it is."

"I caught a hint of something—" murmured Jan. He was thinking of the strange expression on the faces of Evano and The Voice when he had last seen them.

"They have adapted my growth methods into this secret ritual in some way, and from it all, some monstrous thing is being produced which will wipe out life, society, all mankind as we know it."

"Then the real trouble is not the production of flesh for military conquest—the perfect soldier—the robot?"

"Not at all, though that is what I had thought at first. It is something far worse and more dangerous."

"Professor, would you tell me more about your processes . . ."

"Well, I have been a student of life processes since I became a medical savant, and I am recognized as an authority on the subject. I have discovered that certain cells of the body will grow and change and adapt in certain fluids, and that the composition of these fluids can be changed in such a way that cells of any type could be produced from certain simple life cells. I learned to control that growth by the use of amino

acids. For instance, if I added aspartic acid, I got specialized adaptations of human cells, and when the original cells were brain cells, I got superior brain cells of greater flexibility. I learned of such substances as di-methionine, which greatly stimulates the growth rate. And I kept on and on until I could take the ovum of any animal, impregnate it, and grow from it in my own synthetic nutrients a complete living creature whose nature was determined by the amount of each determining compound, and whose adaptation I could control. What I had was controlled birth, by which I could produce animals superior in every way to the original pattern, and I could produce them far more rapidly."

"Yes, go on!"

"You can imagine what happened. The criminal minds behind the Temple crew heard about my work. They, of course, saw in my processes a chance to develop a 'robot'—a being whose will they could completely control. They are doing this to my new race of man. My new race of man who could be so far superior to any man produced by nature."

"I agree to that, after seeing Norna 10."

"They have taken my work from me, forced me to instruct their technical workers in my methods, and are producing such lovely bodies as Norna's for their own plans of conquest. But they have changed my processes to give these magnificent bodies a mind easily controlled by any command. They are producing automatons. In time, the methods they have started will produce worlds on which there are only a few masters, and the rest—"

"We can stop them."

"Fron Dagna has had Norna 10 for a long time. Yet, he has been unable to arouse an opposition movement."

"He will. He is a capable man."

"But that is not all. By a variation of my method, they offer a treatment to their men which refreshes and renews their youth. They have introduced this into the dens of drugs and lust as a refresher, so that a man can take any amount of dissipation and not suffer physically for it. They dangle this as bait before their followers, as a reward. And there is something else that holds their followers, some deep and fearful thing even I haven't learned, the ancient secret and some new use of it."

"Maybe they will drown in their own evil work."

"Not a chance. I know what can be done. If I could get free, I know how to stop them—by counter production of more able creatures than their own ill-devised life formulas. I could find a way to stop them."

Twice a day, the big robot guard brought them food. The rest of the day, there was only silence in the stone corridors about them.

The big guard wore only an apron-like garment about his waist and a weapon belt, from which dangled his keys.

After days of planning, only one method of escape occurred to them. Jan stripped off the clothes he wore and tied on a crude imitation of the loin cloth and apron worn by the guard. He belted a whittled wooden gun about his waist with his own worn belt. The old man managed at last to pick the ancient lock with a piece of metal from the bunk framework.

Then Jan marched the old man down the corridor, walking very straight and feeling very foolish in his acting. It wouldn't work if they ran into any true humans, but old Metzner thought that the young synthetic minds, corrupted by some method of idea fixation into complete tools of the Temple crew, would not even notice that Jan was not

one of them.

Jan kept feeling along the walls for one of those hidden turning stones which Evano had used, but Metzner hurried him along.

"I know a way out, if we can reach the place."

They passed along several of the ancient abandoned corridors under the Temple, and entered a mouldy chamber containing a few sticks and rags of former occupancy.

Metzner pulled the rotted remnants of the bunk from the wall, and removed a stone. He crawled through, followed by Jan. Once long ago, someone imprisoned here had burrowed a tunnel through the earth. After a short, smothering crawl, Jan poked his head above ground. They were in a garden; the tunnel had emerged among the shrubbery. The sound of voices nearby held them rigid. They peered out through the screening leaves.

It was a large garden, and one on which vast labors had been spent. It was riotous with color, many of the plants were imported, were exotic and alien to Jan. The birds here seemed to have found an especial kind of Eden, and sported and sang wherever the eye turned, in complete disregard of the group of people who sat at the edge of the fountained pool. Music played softly, and robot-women, as Jan recognized them, made a lovely scene of impossible perfection about the gross body of a man over whom they were fussing. Metzner cursed to watch his creations who had been turned into tools for pleasure only. His heart cried within him as the lovely girls made obscene gestures about the man.

"See what they do with my work," whispered the old man to Jan. "If they had been properly raised, they would have been superior to any other people. Instead, they are taught every form of

debauchery, and made into mindless creatures of pleasure. And they could have good minds, too. But they have such a short youth in their rapid development, that they do not have time to develop a mental defense. Their sex springs full-blown from the tank of their birth. They are too innocent to understand that they are being robbed and made dupes. They are like children; very smart children, too."

"Do they stop growing when they are removed from the tank?" asked Jan, noting how tall some of the women were.

Old Metzner chuckled. "I never had a chance to find out; they took my work away from me. But to my observation they are still growing, and that makes for my enemies a certain problem, does it not?"

"We've got to get out of here. They will find us gone, and look for the tunnel you found. We are close to its mouth."

"You're right. No use waiting, I guess."

But as they were about to crawl through the shrubbery to circle the garden in search of openings to freedom, two uniformed men hurried across the flowered grass, and salaamed before the man ensconced in the cushioned couch by the fountain. They could not help but overhear:

"Excellency, the fleet is ready."

"Well, help me on with my uniform. Duty calls, dear ones, I must go."

"Ah, we are so sad to see you leave. Must you?" Saccharine, the women's voices, while the two officers bundled the fat admiral into his too-tight glory of braid and buttons, pinned on his decorations, belted him and sworded him, followed him out of the garden. After he had gone, the women laughed like children, and ran from the garden, skipping and leaping like wild things.

Immediately after the departure of the officers, The Voice and an aide came strolling in. They stopped within short feet of the two fugitives' hiding place, and began to talk in low secretive tones.

The peculiar, deep carrying tones of The Voice startled Jan. "We've got to get the old man out of his cell and use him again. We're going to make a test to measure strength, and the old man will have to check the formulas and make some changes. These males from our tanks are too mild and good-tempered."

"How in the devil will you get him to do it? You know he has been resisting our will."

"He disapproves of everything we do, Farns, but we manage him anyway. We use a drug which puts him into a hypnotic state in which he responds to any command perfectly. He doesn't even remember the work he has done for me, for the most part."

"Are you sure he hasn't some plan to get the better of you. Those robots look at one so enigmatically, almost as if they were biding their time. They give me the shivers!"

"They're like children, nothing to worry about. Why, the oldest of them is only six years out of his tank."

"They're darn smart children, Chief. I'd be careful if I were you."

"They do outnumber us about ten to one. But, Luana herself couldn't be any more soft and sweet and good. Obedient children, that's all they are."

"Chief, if they ever grow up and get wise to themselves, it'll be murder!"

"Well, I'll figure out a few precautions. But I can't see what worries you."

"There's no reason you should consider these robots any less dangerous than human beings. Remember, they have minds, and they can be rebellious."

"Well, I'll take a look into a few of their minds and see what's going on. I have a way to do that, you know."

"I've heard, Chief, but I never believed it. I thought it was just another bluff."

"You get the old man ready for his shots, and let me do the worrying. There'll be no robot revolt, I can assure you."

As the pair moved off, the old man began to scramble back toward the hole from which they had emerged into the garden.

"Where are you going? That's giving up!" yelled Jan, trying to hold him back.

"No, this is what I've been waiting for! You can stay here and try to get out if you want, but I've got to get back. Those army robots are something I've got to have my hand in. If I figure out the formulas for them, they will be what I want. If they do it, God only knows what they'll turn out. Let go, Jan, this is my job. I've got to do it. It means the future of mankind, and they don't realize it."

"Or give a damn. Well, I'll go along and wait another chance. If we can do it once, we can do it again."

Together, the disgruntled soldier and the old scientist crawled back through their tunnel, brushed the dirt off their bodies and made their way back to their cell. They had just gotten the door locked again when the robot-guard came for the old man. Sorrowfully, Jan shook his hand, saying, "I'll wait for you, I guess. Don't know what else to do. But if I'm not here, you know what I'll be doing."

The big guard looked at Jan with a curious, purposeful lack of understanding in his eyes, and Jan knew what the aide to The Voice meant by fearing the robots. Whatever meaning might be read into the guard's expression, it was

an alien one in which Jan was less important than an insect.

Jan waited till the light had gone from the one high window and the cell was black with night. Then he decided to make another try, alone. He believed the old man would not be back for weeks, and if he was as weak as when Jan first saw him, they would not be able to try again for weeks more. Jan could not stomach the thought of spending that time alone, even though he hated to think of leaving without his friend.

Jan was not so expert as the old man in picking the lock, but he had seen how it was done, and after an hour of work he had the cell door open.

Once again in the flower-scented garden, Jan squatted among the bushes, wondering which way led to freedom. There were three wide doorways from the closed garden into the tall old walls of the ancient building, and Jan knew that one of them gave upon halls and chambers filled with "votarys," with women slaves, and with the uniformed robots, whom Jan did not fear greatly but whom he greatly respected for their strength and speed.

He chose the first doorway. Screened by the feathery shadows of the fern tree near the door, he looked down the long dim corridor, expecting everything but what he saw—nothing! Encouraged, Jan stole down the dim length, stopping now and then to peer into the grilled doorways he passed. Within each chamber, as he passed, Jan noted one long-bodied, perfect robot-woman.

The velvet hung walls framed the sheer perfection of the long relaxed bodies, so that the sweet singing curves of them made Jan's throat ache and his heart pound. But he was after freedom, and he had no time to stare. One doorway however, was lit, and Jan crept toward it with care, for within he

heard movement and sound.

This was no single chamber; this was a long laboratory. Rows of tanks lined the walls, and several white-gowned technicians were at work inside. As Jan watched, curiosity overcoming his caution, from one tank rose the white body, dripping and heartbreakingly child-like, of a female robot. Her eyes were blank, her face expressionless. Jan watched as the white robes led her to a chair, and placed her so that her face was held rigidly toward a set of spinning mirrors, each of which reflected a bright light, a dancing pattern of weirdly zig-zagging points and lines of bright fascinating light. One glanced at his glo-roll watch, and after several minutes began to talk to the new-born robot. She made no answer, and the technician then placed a helmet upon her head, and started a cylindrical record spinning upon its axis. After a time, the child-woman's lips opened, and she began to speak. Jan knew that what she was saying was an echo of the sounds or meanings the record was imprinting upon the new, clean page of her fresh, untouched mind.

As Jan withdrew his gaze and prepared to continue down the corridor, he heard footsteps from within the laboratory, and he scuttled backward into the shadows of the nearest doorway. The door of the laboratory opened, and two of the white robed technicians came out, pulling off their gowns. After them came three more, and then another. To Jan's recollection, the place should be empty now. The last man out inserted a key in the doorway, and went off, leaving the key in the lock. Evidently, he meant to be gone but a short time.

That eerie sensing of the unknown that had so aroused his curiosity when he first met the robot Norna 10, now drove Jan to that door. He glanced

within, and seeing no movement, he slid inside.

Eagerly, he scanned the big room, wondering what this place could do for men if it was not in a pander's hands. The white, naked body of the new robot-woman sat still in the chair where she had been left, staring at the circling, hypnotic mirrors, and murmuring her faint echo of the messages on the spinning record. Jan slipped close to her, touched her moist skin, marveled at the fresh, clean newness of her utterly charming body, at the baby pink skin itself, at the perfection this artificial growth allowed the human flesh. How was it possible that these artificially cultivated cells should so beautifully take on form and muscle and bone?

Then, the words the hypnotic-tranced child was uttering caught Jan's ear. "I will do as I am commanded. I will utterly abase myself before all authority. To all men who have money for my master, I will be a completely physical slave. Forever will I strive to please such men, to bring pleasure to their bodies. There will be no other thoughts in my mind but how best to work for my master and for those who bring him money and power."

Over and over, the girl repeated these words, her blank eyes staring into the revolving mirrors. Jan glanced into the tank from which she had just emerged. Within, he saw a harness that had been about her body, lying discarded in the green fluid of the tank. Jan bent and retrieved the harness, noting that two little plugs were designed to fit in the ears. With mounting curiosity, he plugged the apparatus into his own ears. For a second revulsion shook him, then it passed away and the insidious sounds, vibrant with a kind of electric meaning that sank into the brain far more penetratingly than pure sound, began to tell him many things. False logic, child's

primer thoughts neatly perverted into a false meaning. The thing went on repeating its lessons. First, it was fairly advanced, then the thing gave a click and Jan knew that the record driving it had been automatically changed. Now it was A-b, ab, b-e be, child's primer work, and swiftly the record went on, through the simplest meanings to the more complex, and on and on. Jan stood there, taking in the whole life record of the mind that had been in the tank. Jan was horrified. This was a filthy thing to do to any creature. There was no true thought in that record, no true logic; but only false pictures of what great happiness there was in store for these women when they performed the duties requested of them—the most abasing filthy duties that Jan had ever heard of. Those poor creatures, Jan fumed, were taught from their first mental impulse a mass of perversion of all truth. The records clicked over, going through their repetitive formulas, and Jan stood there, as the night crept on, getting a clearer and clearer picture of what was in each robot's mind. It was no wonder they were meek and obedient and slavish.

This was mass production of the vilest kind of mind, yet in a way the most harmless kind of mind imaginable for those who held the whip over it. Black was white, here, and white was black, and the poor new mind was taught to believe that only by sinning greatly for the commanding one could they win reward. Jan knew now what was in the minds of these women, but he did not know what was in the minds of the robot-guards. He must find the records, must learn all about this production of humanity to order.

Jan went from tank to tank, pulling out the ear plugs of the minds within, listening for a minute to the records, then replacing the plugs. All were the

same, but some were far worse than others in their hypnotic impression of the command toward lust, toward abasement, toward complete surrender of ego to another, viler thing. This must not be, vowed Jan, realizing now what a martyr old Metzner was, and what a terrible crime it was to take his life work and pervert it to this end. All the manhood in him rebelled, revolted at the repetitive crime of stealing the new-born soul before it ever had a chance to choose anything in life for itself. This was, as Metzner said, the end of humanity. No matter the morass into which man had already plunged, this was an abyss from which the race would never rise. These were adults who had never had a childhood, these were creatures who had never had a thought of their own, these were a lovely excrescence upon the face of nature. These were not only alien, they were a thing beyond belief. It must not go on!

Jan squatted by the lovely new child-woman in her chair who was staring at the hypnotic whirling mirrors and drinking in the vile flow of the records. Jan stopped the turning mirrors and the record, then pulled the plugs from her ears. Softly he asked, "Are you awake, little new one?"

Like a voice from the grave, yet lovely and fresh and child-like, but automatic as a machine, the reply came, "No, I am not awake. I sleep."

Jan realized she was under the hypnotic control of anyone who happened now to be near her, and he said, his mind leaping to find a use for her in his own predicament, "Do you know where you are?"

"I am in Luana's Temple, the most wonderful palace of all pleasure."

"Yes, but do you know the ways, the halls and doors, do you know how to get about?"

"Yes, it has been pictured to me by

The Voice."

Jan suddenly realized that The Voice as he knew it might be many voices, was in truth the method whereby the robots were controlled from a distance. Raised to listen to "a voice" in their minds from the time of their first breath, or perhaps from their first movement in the tank, the method went on all their lives, the voice in their ears was always the "master," of everything they did or thought. That the voice was a criminal gang, and not one person, a gang who owned Metzner and his robots and much of the power over all Champi, Jan did not doubt now.

"I, too, am a voice. Can you show me the way to get out of here?"

"Yes, Master. I can take you to the outside. But outside there are only ugly, unpleasant things. Why should you want to go out?"

"I want to take them beauty and pleasure, so that they outside will not be unhappy anymore. Do you want to go along?"

"Outside are only people who cannot be happy in pleasure. There is no use in taking them anything."

"No, little one, outside are many good people who would be glad of your beauty and your goodness. Would you not like to help them, too, enjoy life?"

"It is a new thing. I never heard of going outside. You will burn up with fire! You cannot live out there. You must be made of leather and steel to live outside. Those poor creatures..."

"Yes, little one, it is not good outside, but they need us. We must go. I command it."

"As you command, Master. I will take you."

Jan, whose mind had been spinning with the effort to understand the vague miasma of falsehoods in the child-mind, gave it up and took down from the wall two of the white robes of the temple

technicians which were hanging there. One, he fastened about the girl's figure, the other about his own body. Half-supporting her, he unlocked the door, led her out into the dim corridor. Her eyes remained closed.

"Open your eyes, child," commanded Jan.

She gave a little cry of pain, for the dim light was too bright to her unused eyes. Obediently she stared about her.

"Lead me outside, child, and I will show you wonders never pictured to you."

"Yes, Master." Her soft new feet began to move unsteadily, quickly her stride became less a tottering leaning upon Jan and more strong, and Jan wondered at this thing which had never walked learning how within short minutes. Impossibly wonderful, these creatures of Metzner's.

But abruptly they saw, turning the curve of the corridor before them, filling the corridor from wall to wall, a procession of chanting, white robed devotees. These were the younger priests and women of the Temple, and Jan surmised that they were in ceremonial procession toward some rite.

Jan pressed the girl back against the wall, hoping the procession would pass on unnoticed. But as the corridor filled and the bodies pressed against his own, a tall dark-robed priest among the white spoke to Jan, saying, "Come, you, join in rejoicing. This rite is attended by all."

Jan, to save argument and possible exposure of his disguise, took his place in the swaying mass, trying to move so slowly forward that the others would press past him. But they moved closely with him; there was no way to let them pass without struggle. Jan gave up for the moment, moved along, the little new-born held in the shelter of his arm.

"Do you know what this rite is that we are going toward?" he whispered to her innocent small ear.

"It is the terrible obeisance before the Flame Queen. It is the most feared observance of the Gateway, the deepest and most sacred secret of Luana!" Her voice was filled with awe, and Jan saw that she had been indoctrinated with a vast reverence for this "observance of the Gateway".

Impossible to escape the onpressing horde of white robes, interspersed with the occasional dark robes of the higher priests. By now, Jan was consumed with curiosity as to the dark secret of this ancient planet, denied to any but the initiates of Luana. Only those who had given up all to follow her, the Goddess of Lustrations, the Personification of the Principle of Life, life purified by passage through The Flame—only such as were ready to lay down their lives for the Goddess, were allowed to join in this ritual.

The flow debouched into a tremendous dome-roofed theatre, tiers of seats surrounded a great blank wall space. Jan helped his little new-born protege to a seat and sat down beside her, waiting, mumbling, moving his lips as though, he, too, were chanting the continuous prayer which all the others were. As the bowl of seats filled, a glow of hidden fire grew slowly out from the center of the blank wall. Some strange force vibrated there hidden beneath the wall. The assemblage rose, stretched out their hands to this fiery glow, shouting, "Luana, appear to us, give us thy force and thy wisdom..." and as if the hand of a God had truly waved, the whole apparently solid stone of the wall dissolved upward from the flame, and Jan sank back unbelieving.

For beyond that wall, tall flame-trees grew, and beings moved in weird beau-

ty, peering out as though seeing the assembly dimly. What was this, a miracle in truth?

Or was this another of the powers long forgotten, but once controlled by the race that had passed on? Was this the Gateway? Was this some awful ancient secret of breaking down the barriers between worlds, dissolving space itself, and opening between alien spaces some common dimensional bridge?

From the flame world so suddenly revealed, a flow of sensually caressing emanation spread, palpable as flesh, invisible to the eye except as a rosy glow of frightening, quivering aliveness. With the spread of this vibrant glow, there spread an ecstasy; irresistible quivering spasms of unbelievable pleasure flowed through the throng. Males and females fell down in obeisance to the being who undulated forward toward the barrier of flames, paused there with hands upraised, and sent from her body great pulsing spouts of fiery vapor which burst through the invisible barriers and spread out over the devotees with an intense effect, as of the ecstasies of Paradise made present. Jan himself was shaking in the grip of this terrific attraction. Vibrating through his body was not only a terrific flow of an energizing sensation, but an attraction beyond control drew his mind toward union with this creature, the Goddess of that world of eerie flame beyond the Gateway. Beside him, the little new-born thing, slender and pure and utterly enslaved by the sight and sensation, sat rigid, her eyes upon the fiery queen who pressed against the invisible wall, her arms outstretched in benediction.

Beneath this gigantic pageant of sensation and visual impossibility, there arose a tall black robed figure. He waved his arms for silence, then announced, "This night the Gateway shall

open, and certain of the chosen who have earned their reward shall go into the world of our Goddess before your eyes. This is what we all strive toward, and this is the greatest of all rewards—that we may join our Goddess when our labors here are completed, and her plans for the worlds of our space are carried out. Behold!!!"

He stepped back and down, and three people, two women and a man, took his place, standing there beneath that mighty Goddess in the Flames of the Gateway. Jan pondered, even as his whole body shook with the unearthly energies released upon the devotees—just what really was happening? Was this all a mighty illusion? Or did these priests of Luana have the secret of interdimensional travel? Did this worship of Luana in truth stretch beyond the universe he knew to others, did they in truth labor for some greater living being? Or were his eyes, as well as his senses of touch and pleasure and hearing, perceiving only illusion, some mastery of the mechanisms of perception from the past giving them the key to complete abolishment of what we call reality, by a vision of a seemingly more real reality?

One of the women standing beneath the vast barrier of flame cast off her white robe, and stood now, staring upward ecstatically, her body arching backward as the Goddess bent and threw her a mantle of the sensually encircling flame. Step by step, the woman mounted now, her arms outstretched, her feet treading on what had been nothing but empty space.

The Goddess—Jan strove to see her clearly for what she was, to cast off the mental effect of all the ecstatic beating force about her, to see her outlines and her features clearly in spite of the flames of force. She was gigantic, three times a man's height, her long rosy

limbs naked, her proudly arching hips humanly beautiful, her torso perfection. *But her arms were wide-swept flame-hued wings*; beating, beating, reaching to enfold the ascending acolyte; and her breast was a whirling paradise of soft flames of what he knew must be rapture, must be divine energy in a flux of mysterious animal creation, must be voluptuous enchantment of all the senses. Her great arm-wings folded now about the slight body of the transported woman, and step by step the mighty figure moved backward, the flowering flames obscuring the tableau of divine beatification.

The mystic rhythmic movements of the incomprehensible beings moving among the flames swept into a climactical transport of dancing patterns of joyful ascension. And Jan sank back into seat with relief as the unbearable beauty of that perhaps existent world was obscured by the again advancing form of the Goddess Luana. Again the chosen creature rose, walking up an invisible stair of empty space, entered the arms of perfect flames of sensual ecstasy, and again the strange scene became an incomprehensible series of fluctuant patternings of energy. Was this true? Jan asked himself, striving with all his faculties to pierce the perfection of the illusion to the core of the reality. But he could not. He now understood perfectly the power of the worship of Luana, and that this power would not be wiped out by anything short of full mobilization of the whole Empire. If this power was in truth plotting the downfall of the Empire, certainly the outcome of the issue was very much in doubt. This performance was completely successful in its subjugation of the senses, in its seduction of reason, in its promise of Heaven!

But meanwhile, he had better be thinking of his own skin. Noting that

all about him were in complete intoxication with the splendor of their Goddess and her Heaven, Jan rose to his feet, and with his hand about the arm of his slight protege, moved out from the throng. He found no hand raised to halt his exit, and soon the girl and the soldier were passing along the deserted corridors which had a short time ago been overflowing with the devotees of Luana. If that illusion were real, if that Gateway were not some masterly trick, he would have thrown himself before Luana this day, so great were her promised pleasures.

But it could not be a true thing for, if it were, The Voice would have been the first to serve her, and Jan knew well that canny-eyed person served none but himself.

It was now early morning, and few were about. A robot-guard at a doorway as they passed jerked his head in a bow. On and on the strange pair passed.

At the wide main doorway, Jan straightened his back, holding the girl's arm stiffly to keep her from stumbling. She gave a little moan, and looking down, Jan saw that the new skin of her feet was oozing with a bright moisture of the same color as the fluid in the tank. Jan was filled with pain, realizing that these new-born ones were probably put through a program of exercise to harden them to life, to take the place of the ordinary human's lifetime of growing up.

The guards at the doorways held their long Z-rifles rigidly before them, and Jan passed with his heart in his mouth. It was but an hour to the time of his first feeding, and he knew that soon the alarm would be out for him. Down the long quiet Street of the Fountains he went. He hated to walk this child so far on her first trip into the world, but he could not dally. They would be

searching for him. He hailed a passing toll-car, thanking the Gods there was one cruising through the double-edged shadows of the morning's suns. Before Fron Dagna's official residence, he told the driver to wait, for he had not a re-at.

The child was staggering with weakness as they went up the long stairs, past the six guards at the wide entrance, to be stopped by the spruce young officer just inside the doorway.

"Intelligence, sir. Lost identification. Been imprisoned. Fron Dagna will identify. Please rush it, this child needs medical assistance at once!"

* * *

The Imperial Regent of all Conamor raised his shaggy white head from the slice of melon, glared at Jan for a moment before he recognized in this white-robed Temple dupe his own agent.

The subservient orderly excused himself volubly for bringing these two distressed creatures. Fron Dagna bellowed, "Get out! For once you did the right thing. Don't apologize for it!"

Norna, beautiful as dawn and grave and serene as the Goddess of Morning herself, entered at the right, moving forward with her unbelievable grace, and striking Jan's senses with fresh awe.

"My abductor, how do you do. So nice to see you again!"

"It is more than nice to see you, Norna 10, as you must know without being told. But your escape placed me in the worst possible light with the priests and The Voice. They imprisoned me. They thought I let you escape purposely. I have learned a great deal," Jan turned to the Regent.

"Well, what have you learned? You can't learn much in a prison cell. It's a wonder they didn't kill you." His voice told Jan that the old man was not enthused with the way he had carried out his orders.

"I have learned what the heart of the religion of Luana consists of, I have learned how they grow these synthetics to be slaves, and I have brought you this girl, just out of her tank last night, to show you. I have been in prison with the scientist Metzner. I think I know everything necessary to bring these plotters to book!"

The old man sat down again. "Yes, yes. Go on," he urged.

"The rate at which the monsters who hold Metzner are producing the synthetics means that we must act at once, if anything is going to be saved from their dominance. They must be stopped, and everything will be lost if it is not done at once. This mass production of human flesh means chaos."

"Norna 10 is not chaos," murmured Fron.

"Norna 10 is one of Metzner's products. She has instilled in her brain and heart, the good that Metzner put there. But the new ones, those that have been created with evil . . ." Jan's voice was urgent.

"The men who now control this process," he continued, "will in time dominate all other men, conquer all armies with their creatures whose only thought is to obey. It means the end of man as he is now, and the beginning of something terrible, an evil which we cannot even imagine.

"Will you let me demonstrate with this nameless child, just arisen this morning from her growth tank?" asked Jan.

"Go ahead," said the Regent, idly stroking Norna's hair and looking into her eyes with a strange, deeply seeking gaze.

"The Voice tells you to kneel, little one," said Jan, striving to make his voice the monotone he had heard upon her teaching records.

The angelic form knelt slowly by

Jan's side.

"Now tell the people where you come from," went on Jan, in the same monotone.

"I come from the beautiful Temple of the Holy Luana, the most marvelous place in all the universe. There is never anything but pleasure and happiness, and there my Master reigns supreme."

The old man snorted, and looked askance at the rapt face of the child-woman.

"How old are you today, little one of the new soul," asked Jan, waxing poetic under the influence of his successful exposition.

"I am eighteen weeks old today, and this is the day I was taken from my growth place, and I will become one with the ever-happy people of the palace of Luana."

"Eighteen weeks to grow an adult nearly to full development!" The Regent was again incredulous. "It's impossible!"

"But true," murmured Jan. He turned back to his captive. "What will become of you when you grow old and die?" he asked, more out of curiosity than for any useful purpose.

"We people of the green fluid do not grow old, that is, ugly. When we get ugly, we are made again into fluid and a new being is begun into which we are reborn."

"Has that ever happened?"

"Not yet. No one has grown old among us yet."

"What are you going to do for the Master to earn your living?"

"I am going to serve him faithfully, giving all my skill at pleasure-making to the men who come with money, and to no others. That will make him happy, which is my desire."

"Do you love your Master, little one?"

"More than my life, I love him; more

than anything there can exist, I love him."

"Who is your Master?"

"My Master is The Voice, whom all men obey!"

"*The Voice*," shouted old Fron Dagna, who had spent years of searching, and broken a dozen police officers for not catching this well-known criminal. "He's at the bottom of this, eh!" His pink face was purpling under his bristling mane of snow-white hair.

"Will you never love a man of your own?" Jan went on.

"I will love only whom the Master wishes me to love."

"If the Master should cast you out of the Gardens of Luana, what would you do?"

"I would throw myself into the Lost River, for there is no life worth living but for him."

"Enough, Micka," shouted the Regent. "I see what you mean. They think The Voice is God almighty himself. I must call a meeting of the department heads of the Imperial Force. We'll get to some kind of action before the day is out. Norna, take care of this child for me."

"One more thing, Your Excellency," Jan earnestly implored. "You must remember that although Norna 10 was created by Prof. Metzner, out of his own formula, The Voice had her under his evil power for some time, and she has been hypnotically conditioned. If they got hold of her once more, they would know how to get information from her—things she learned while with you. The Voice still has the power to command her—his influence does not die easily. He might command her to dispose of the child, or of herself, or of you!"

"Norna will be under constant guard, by my most trusted men. There will be no slips, rest assured."

"Excellency, I know Professor Metzner, I was in prison with him for days. I had accepted your story of Norna 10's loyalty to you and to him, but he told me that she had been in their hands for some time, and that they had let her go to you to act as a spy. That is why I have tried to warn you against her, because the business of my abducting her was peculiar . . . Why should they want her when they had so many? Just to get evidence of their work out of your hands? It was not that, for you had been unable to arouse interest in the synthetics even when you had her as proof. It was because she had been hypnotically conditioned before her release into your hands, and would now be unable to hold back information from them."

"Never mind Norna 10. She has told me all that. I have not allowed her to have any information they could use."

"But now she will tell them I am here, and what I have said!"

"Never mind, I am not a fool. Go on!"

"The headquarters of their synthetic production is in the main temple of Luana, as you must have guessed by now."

"The one with the big dragon stairway?" asked the old man, picking up a disk phone and throwing the switch to connect him with his Fleet Officers.

"Yes. But that is not all that is there. There is in the big chamber of mass worship a blank wall that, upon certain mummeries, becomes a gateway to another world. If it is truly a gateway and not an illusion, we have a grave problem! That could well become a bridge over which a vast army could enter Champi city and conquer all Conamor. This is what lies at the bottom of their plotting, this is the bait they dangle before their slaves—elevation through the gateway into a kind of

Flame Paradise. This is what I bring you that you did not know—the source of their power, their method of escape if attacked. Only by closing that gateway can they be conquered."

"Did you see this gateway?"

"Yes, but it is impossible to tell whether it is an illusion done by projections or a real inter-dimensional pathway between worlds. From my observation, I would say it was a true pathway!"

"So if we attack the Temple, we may in truth be attacking the resources and numbers of a world, and so lose to their strength. A bridgehead of inter-dimensional conquest! Do you hear that, Major-Genro?" Fron Dagna bellowed into the disk-phone, and Jan could hear the man at the other end of the ray-beam display incredulity.

"Nevertheless, mobilize for attack in full force, and dispatch full explanation to Falron with demands for additional forces at once. That's an order!" Old Dagna banged the disk back into its pocket with finality and deep anger at being doubted.

"Now, Jan, you and I have to plan to get Metzner and Nalna, my daughter, out of there before the fireworks begin!"

"I don't know how that can be done!"

Fron Dagna picked up the disk-phone again. "Give me Medor Donney, at the base."

And then, "Get up here at once, Medor. I want you to take active command. I have a little mission to accomplish and there's no one else I could trust with my life . . ."

Norna and Jan led the old ruler along the tunnels toward the Temple of Luana. He had insisted on placing his life in the hands of the enemy, which was past Jan's understanding, unless the old man was tired of living. He must have

his reasons, and Jan surmised he expected to make some appeal to try to save the life of the invaluable scientist Metzner even at the cost of his own.

Behind them a column of Imperial troops marched, and Jan knew that others were stationed along the way to close the other tunnels leading from the Temple. Dagna was not doing this by halves.

Jan expected to hear The Voice mocking their efforts. But there was no sound of him.

At ray-rifle range from the foundations of the Temple, the column of troops stopped and began to deploy through the other connecting tunnels which led toward the Temple.

Fron Dagna, accompanied only by Jan and Norna and four guards, entered the same way Jan had been led by the priests, passed through the "lounge" where the idle, too-lovely synthetics awaited their calls to the rooms above, and passed into the elevator that waited there as it had earlier.

The elevator ascended, nearly filled to capacity with the seven. Jan's face was pressed close to the perfumed curls of Norna 10, her body was a poem of delight against him. How could such powerful attraction and heavenly beauty exist in the minds of men as only objects of barter or as a way of making gun-fodder more cheaply? Jan mused that it was the poverty of men's minds that made of the world a mess of futility.

The metal door slid open; Jan leveled his explosive-pellet air gun, his hand-grip uneasy with expectation.

Lined across the far wall of the room were a score of big-bodied, handsome robot-guards, heavy Z-ray rifles held on aim upon the door of the lift. At the same crystal desk sat the lean elegance of the man Jan knew as The Voice. His slim jeweled hand toyed with the heavy

ornamented gun he had drawn on Jan before.

The old Regent stalked from the elevator cage and stood accusingly before the man's desk, eyeing him and his luxurious office with scorn and a kind of triumph, for he had searched for this place for years.

"At last we meet," The Voice murmured, sipping something from a fragile goblet.

"Yes, we meet!" Fron Dagna's voice was truculent, wholly courageous and dominating. "I've come for an accounting long overdue, and you can send these mindless synthetic creatures of yours back to their alphabet blocks. We have business to discuss."

"I can't imagine what we could have in common to discuss," The Voice smiled, making no move.

"I have dispatched a full report of your synthetic production of human flesh, your plans, your gateway, everything, to the Emperor! And believe me, Fron Dagna's reports do not go into the Imperial waste-basket."

"This one will, I assure you."

"If you continue to make trouble, be sure the Empire will wipe you out! Your last chance for life and freedom is to place yourself in my hands, turn over your records and formulae, and by complete co-operation gain amnesty from the charges already lodged against you."

"If you were sure of your power, Fron Dagna, if you felt that you were able to handle my power once openly pitted against the Empire, why are you here with such an offer?"

"For two reasons only. The life of my daughter and of the old scientist Metzner. If we are forced to blot this place off the map in bomb smoke and ray-fire, it is a certainty nothing will emerge alive!"

The Voice smiled widely. "I can't

imagine what you would do with my business, Fron Dagna, if I did turn it over to you. Pandering is frowned upon in the Imperial court!"

"I'm not here for your humor, little man!"

The foppish figure pointed the heavy ray-gun at Fron Dagna's resplendently uniformed chest. "I can't think what else brought you, unless you are tired of life?"

"I have a job to do, lightly as you may regard the business of dispensing justice. I have arranged to put a stop to the manufacture of these viciously distorted minds in your synthetics, and to make sure that in the future they will be made in a way that will not disturb the economy upon which the Empire rests. It is up to you to decide whether you are ready for war with the whole Imperial strength, or whether you will place yourself and your forces at my command, dependent wholly upon my mercy!"

"I doubt your Emperor would take this extreme view of the matter," murmured The Voice.

"Neither will the Emperor raise a finger to halt the natural turn of events. On Conamor, I call the turn! Exercise that little used brain of yours and you will realize that you have no other course of action."

The elegant figure raised his fragile glass to his lips. "You say you have the power to wipe me out, yet you place yourself in my hands and expect me to capitulate without a struggle. You are a fool!"

"I came to save two people's lives. If I attack this place, nothing will live within it. Metzner and his methods will be lost forever! I would avoid that, even at the risk of my own life."

The old man glanced at the glow-cylinder on his wrist. "I have already appointed my successor, a very able

officer named Medor Donney. He sits at my desk, watching a cylinder synchronized with the one I am wearing. If I am not out of here within a very few minutes, the attack begins. Naturally, my successor is not particularly worried whether I survive or not, as he gets the job if I die. He will attack, for those are his orders."

The slim, unperturbed Voice half raised from his desk, his face slipping from its mask of elegant urbaneness into one of undisguised and ugly rage.

"You think you have me checkmated there, eh? Well, two can play at that game of bluff. I'll hold you and find out what happens, old man."

Jan's shoulders sagged. The Regent's carefully planned coup had failed.

Fron Dagna smiled frostily. "Perhaps it's better that way. At least there will be no mass-production of human beings to be used for every vile purpose which suits such as you!"

"We'll wait, gentlemen! And when that attack fails to materialize, you can resign yourselves to a good long stretch before you see the light of day again. I have as many cells in my prison as you in yours, Fron Dagna. Do you think your fragile health can withstand imprisonment?"

The old man only looked at his wrist-cylinder. The little cylinder revolved, marking off within its glowing, circling miniature suns the minutes and the hours. Fron Dagna watched it, holding an iron rein on his old nerves, and the others peered fearfully at his wrist.

In the big house of the Regent, official headquarters of all justice on Conamor, Medor Donney, installed in the old man's seat of power, waited nervously.

It had been bull-headed of the old warrior to walk into The Voice's hands, but there was no arguing with him.

High overhead, just out of normal

vision's reach, circled two score war-hounds under Donney's command. It was his first experience in such complex command, but the old man had insisted.

The Valiant, Donney's own ship, on which he had once been first officer, was up there in that circling array of death, waiting to wipe The Voice's nest off the earth with burning ray-fire, with rocket-bombs of Binoluene, which was according to Fron's orders. But Donney had ideas of his own. He felt that The Voice would not capitulate, would not believe the old man's iron will had ordered his own destruction.

Donney ordered the city police to surround the Temple at a block's distance, to avoid letting his quarry escape through the many passages of the ancient city. As the last second of the deadline approached, and no successful party with Fron Dagna at its head emerged from the towering pile of the Temple, Donney ordered an alert, both in the circling heavy-armed space flyers aloft, and to the forces afoot in the streets.

Exactly on the deadline, out of the wide ornate entrance of the ancient Temple, down the wide Dragon-guarded stairway, spreading out into the city of Conamor, came a force of the tall, clean-limbed handsome robot soldiers, their long Z-rifles ready, and in the hands of some, the mysterious silver rods that Jan had noted.

Simultaneously, screaming down through the thin strato-air came a diving line of jet-blazing, ray-lancing fighter vessels. Long, needle thin, their armament blazed a sudden, irresistible fire upon the circling ring of Imperial vessels. The ring of force, which Donney had thought sufficient to hold anything The Voice might have in reserve in the way of space-fighters, broke, scattered, fled under the fierce and un-

expected attack.

* * *

The Voice, watching the sudden attack of his forces, turned triumphant to Fron Dagna. "First Conamor, then all of Champi, then, in time, the Empire itself. I doubt that such as you will stop me."

Jan, watching the turn of events with a mind unable to grasp the suddenness of The Voice's prearranged coup, looked at the old man, seeing the same discouraged, unbelieving stoop in his shoulders that he felt in his own. The Voice was too well prepared for exactly what had happened. He had probably rehearsed these tactics many times.

Three screens across the walls of the big chamber gave a view of the streets; the sky overhead, now flaming with innumerable circling dog-fights; and the waiting line of Imperial police upon which was advancing the tall, perfectly aligned robot soldiers.

The sudden tangle of death and blazing fury in the sky overhead giving him the cue, the fat Chief of the City Police raised a hand in signal, and the line of red-belted police began to fire upon the advancing slaves of The Voice.

As one man, they returned the fire, running forward with great strides, taking cover, firing expertly, and leaping forward again. Somewhere, they had been drilled to perfection. Jan's heart sank. In his bones, he saw the end of his world, and the beginning of a new and less desirable reign.

Flaming down from the skies came a great needle of dark metal, bored with a hundred great holes, to crash with a thunder of clanging, torn metal and futilely screaming jets athwart the Dragon stair of the entrance to the Temple.

Fron Dagna saw the fall, remarked coolly, "One of yours, Voice. How many more must you lose before you do things

my way?"

But before the coldly furious man behind his crystal desk could reply, two more flaming hulks hurtled down, and Jan saw they were the shorter, heavier-bodied Imperial ships.

"There's your answer, Fron Dagna," sneered The Voice, gesturing with his slim jeweled hand to the flame-ringed spots where they crashed into the city ways.

"You don't get the point, and your stupidity is costing you everything. The Empire can afford to crush you now, even at two to one, and will, as I have arranged. If Donney had not disobeyed me, we would both be dead right now."

"I fail to see any profit in your offer," The Voice was watching the Regent's face sharply, wondering if he had missed a point somewhere.

"The profit is that you would have your freedom and your forces intact. This way you die, as well as your men, and perhaps the formulas and the robot's creator, too."

"I do not trust you!"

"The more fool you!"

"That is a point to be disputed. I have still the Gateway, and forces waiting there beyond anything in all your vaunted Empire!"

Jan saw in the man's lean face a certain hesitation, felt that when he opened that gateway, he opened for himself a possible defeat, let in a thing that was greater than himself and would rule him. It was a possibility, why else would he hesitate?

His tall, thin elegant form came from behind the desk, passed between the line of robot-guards, who waited till the seven had followed The Voice, then closed in behind them.

Down the long passages Jan recognized as those he had traversed with the little new-born synthetic, to the rite

of the Opening.

They stood at last before that great blank wall, not among the tiers of seats now, but on the long platform that paralleled the wall at the base. At one side, below the line of sight of the tiers of seats, Jan saw a row of levers, great pulsing lights, a vast spinning dynamo and a disk of shining wires which faced upward upon the wall. Waiting there they found Evano, who favored Jan with a slightly scornful glance, and The Voice with a question: "Must we let her through upon us?"

"There is no other way."

"You know what it can mean!" Evano's voice was filled with despair, and Jan realized that this thing they were about to do was in the nature of a desperate experiment.

At one side, in the long pit which was invisible from anywhere in the room except from that platform, Jan saw a series of great transparent tanks, filled with the green fluid he had come to recognize as Metzner's nutritional growth fluids.

A pump and nozzled hose were at the base of these tanks, and The Voice picked up this hose, directed a thin stream of the green stuff upon the wall. Even as he did so, Evano pulled one after another of the levers, and the power sang along the silver wires, began to glow stronger and stronger about the disk which sent a beam of wide-flung radiance up to light the whole wall with the glow Jan had seen before as the beginning of the opening.

Stronger and stronger grew this glow, and Evano stood back now, her handsome face alight with an eagerness of expected pleasure, and mingled with the expectation of the intense ecstasy of the vibrations from the Gateway was a fear, a dread. . . .

Jan found himself quivering with an awful eagerness to experience again the

unbelievable delight from the aura of the Goddess figure, from the terrific power of the flame beings behind her. . . .

Gradually, even while the battle above the Temple thundered and raged, amidst the sound of the spiteful crack of rifles, the hiss of rays, the sharp explosions of pellets, the great wall of the gateway grew transparent, gauzy. Beyond, they could see the tall flame trees blowing in incredible beauty, the weird half-solid beings dancing, and approaching them, the tall semi-human shape of Luana, the Goddess of the ancient worship of the planet. Jan pondered just what he was seeing and what it meant.

As the figure of the weirdly lovely being came close, spreading her wing-like arms of flame wide and bending her vast body to peer through, The Voice increased the flow of green fluid from his nozzle and directed a tall fountaining spray of emerald fluid upward upon her.

For an instant she wavered as it struck her, then swiftly her outlines became more solid, her misty wavering ceased, she began to advance directly along the path of the fluid.

The green spray splashed and leaped all about the wall, and as she extended her flame arms, the wall seemed to disappear, melting entirely, and the spray ceased to be repelled by the wall, but went on through, splashing around her body and over onto the wavering flame-beings about her.

The effect was startling. Immediately they became more rigid, began to take on solidity, began to walk with seemingly solid limbs instead of dancing on points of flame!

With a surge of strength, the vast Goddess figure beat against the wall of stone, and inch by slow inch forced herself directly through.

Whatever the barrier that separated the worlds, this beam of energy used by the priests partially dissipated it. They must have learned by chance that Metzner's fluids had the effect of conducting the weird forces and rendering the force-effect complete. Or perhaps the green fluid was not Metzner's, but some other greenish liquid. Jan did not know.

As the vast, inhuman and completely lovely figure surged through the barrier, Jan saw that both The Voice and Evano altered their expressions subtly, their faces taking on a semblance of benignity. This fact struck Jan with a sudden key to The Voice's reluctance in opening the gateway. They were supposed to be benign; they had lied to the people of the world of Flame. Or were his eyes playing him tricks, his hopes giving him illusions?

She stood now upon the platform immediately before them, and The Voice was speaking, in the unctuous, important voice of the priest who had officiated there before. Perhaps he was that priest, unrecognizable out of his robes.

"O, Goddess, we come to you in peril and extremity. We beg your assistance against our enemies who are about to overwhelm the Temple of your worship. . . ."

With the terrific stimulation of the flaming surge of her vitality making his body nigh uncontrollable, Jan listened to her voice answering the lean saturnine man he knew only as The Voice.

"You come to me in your need, and you shall have my help. If you were not so worthy and so diligent in my own need for your help, I would deny you, for the time is not yet. But, so be it!"

She turned, and even as she turned, Jan noted that the vast size of her was shrinking, was decreasing, was becoming more and more human. The great leaping flames that were her arms de-

creased and became flesh-like, great pinkish wings of quivering, iridescent living flesh. She was now about nine feet tall, and the shrinking ceased. It seemed that the transition caused this adjustment in size, as the other plane was less dense.

She stood there, peering back the way she had come, and her voice cracked out a vast command: "The hour has struck. Advance and wipe out the evil of this world."

Now, through the quivering lightnings that wrapped the opening in pale energy, flashed the long body of a ship, a narrow winged ship of perfect construction—flashed through and came to a grinding, crashing stop among the seats of the tier. From the bow a great ray lashed out, and the walls beyond dissolved. A great opening appeared in the Temple walls through which the sky appeared. It was a sky marred with the drifting smoke of battle, the great pom-poms of bursting shells, the scream and whine of missiles, the roar of diving ships with thundering jets. And through the opening it had made, the ship flashed out to do battle "with evil."

All at once, the thing clicked in Jan's mind: The people beyond *were good*, and for many years had been lied to by the priests of Luana, who used the gateway to insure their power, but feared it because it was beneficent, while they were evil! Now, Jan understood the hesitation of The Voice and of Evano. They knew they might be exposed as imposters to the people beyond the gateway. He had no sooner recognized this fact, than Jan's feet left the floor in a dive across the stones of the platform, his wide hairy hands wrapped around the slim throat of The Voice, carrying him on and over and down into the pit among the machines of the gateway's creation.

Evano, standing there at the levers, saw in an instant the long, thrashing, elegantly clad legs and distorted unbelieving face of her Master all entangled with Jan's blocky strength upon the floor.

The long jeweled hand still held the heavy barreled hand-gun, raised to Jan's head. Jan let go the throat, seized the wrist, forced the gun aside as the blazing z-ray lashed across the room.

The smell of burnt flesh and the sharp cry of Norna's lovely voice told Jan she had been hit by the ray, and he sickened to think of that white body scarred with this gangster's viciousness.

Jan thrashed the hand bearing the gun hard into The Voice's face, but he clung to the gun. Jan banged the hand on the floor, back into his face again. As he forced the arm back and forth, shaking it like a dog shaking a rat, the ray from the barrel lashed out again, burning a track of searing flame across The Voice's lean face.

It was then that the Goddess Luana reached down and touched Jan, and he froze into motionless paralysis.

Norna stood leaning against the quivering wall of the gateway, one long white arm dangling, her shoulder no longer a poem of perfection but a great, raw wound.

Jan, finding himself immovable, and the recumbent lean strength under him trying to get up, tried to scream, and found his voice miraculously still usable. "This man is evil, Luana, he has lied to you."

Her mind working instantly, with a comprehension Jan saw as greater than human, she touched the body of The Voice with her hand and froze him, at the same time picking up Jan and holding him to her breast that was a whirl of force and mystery and, Jan found, unspeakable ecstasy. With one long

stride, she passed him, still rigid with weird paralysis, across the barrier of the gateway. "Tell your tales to those you find willing to listen, little liar," she called after him.

Jan found himself borne along upon the weird flame wings. Forces mysterious and powerful held him weightless and high, the atmosphere of the world about him crushing his weak attempts at understanding and intelligent observation.

Past him moved more of the long slim-winged ships of the flame people, and Jan knew that only a miracle could save Conamor or any of their plans for Metzner's work.

* * *

Outside the Temple of Luana, the advent of the flame-hued ship, lancing accurate ray-fire upon them, dancing in erratic maneuvers of tremendous speed to avoid their return fire, set the Imperial forces into complete rout. As the sudden appearance of the superior ship drove off the heretofore successful Imperial ships, the ground forces also beat a hurried retreat.

Within the Temple, the saturnine face of The Voice, now newly arrayed in a benevolent expression that ill-became him, laughed aloud to see the consternation overtaking his enemies.

Fron Dagna, seizing the opportunity, spoke to the Goddess Luana: "See, great one, this is not the person you think. He is an evil man who has deluded you into helping him. Please take some measures to learn the truth of this struggle before it is too late for all of us!"

At this reinforcing of Jan's canny assertion by the observant Dagna, Luana became thoughtful, and as suddenly as before, began to pass every person about her back through the gateway. As she turned to seize Evano, the girl picked up her heels and fled too

rapidly to be caught. Even as she herself turned to step through the gateway, the long ships, perhaps obedient to her unseen order, or because there was no further need for them outside, began to return through the great opening in the smashed walls of the temple. After her, they flashed through the opening one by one. As the last of them passed through, the opening began to close.

"It was opened from the other side," remarked Norna to Fron Dagna.

"They thought it was. Perhaps all the science of the gateway opening lies on this side, and they only thought they summoned this being and opened her way. Perhaps they only made a signal which caused those on this side to open."

"Where are we now," asked Norna, weakly, holding her arm and grimacing with pain.

"Luana knows," smiled Dagna, using the ancient expression as it should be used perhaps for the first time in centuries.

"Yes, she is the only one of us who knows!"

"This is a thing I had long heard rumored and never expected to see. I thought always that it was a lie put out by the priests."

"Our lives now depend upon the intelligence of this alien creature. If The Voice is able to delude her again, we are lost."

* * *

It was truly alien, that world about them. Gravity was present, but in fits and starts and in some places not at all. Jan and Norna and old Fron Dagna found they had been placed within a smooth-walled transparent cage, within which they had no weight, and they floated about unable to clutch or hold the walls or floor, as perfect a prison as could be devised.

The trees which seemed like flame

and heat when seen through the distorted energy screen of the Gateway and the grass which seemed to be a glowing red-hot soil, these they found upon closer inspection were merely grass and trees, but of a red hue due to the nature of the air and soil. The flame-creatures which had seemed so awe-inspiring through the Gateway's distortion, were only beings not so very dissimilar to humans, though larger and more graceful and winged instead of armed. Their intelligence they could not estimate from watching them pass outside their prison, their mode of locomotion was due to the nature of their world, its lack of normal gravity and peculiar vortices of force which caused fluctuations in air pressure as well as in the gravity.

But they had not much time for these speculations and observations. They were taken from their cage after a few hours and drawn through the air by the winged humans, whose wings they found ended in finger-like extensions, prehensile and strong and quite as serviceable as a normal human hand.

They found they were to be tried before a tribunal of which the Flame-queen was but a kind of Lordly adviser, and not the judge or jury. There was some form of government here which had power outside hers. Jan guessed that she was here, as to the priests of Luana, a kind of hereditary head of their church, rather than a true ruler.

She sat in a great chair above the tribunal, aloof and disinterested, while beneath the sculptured feet of her throne were seated a row of winged humans, their great flame-feathered wings gathered about them like cloaks, their faces severe and dignified, ready to dispense justice.

In words they could not understand, the charges were outlined, the case was made clear and they were drawn

forward, still floating helplessly in the air, to answer. Then the translation went on rapid-fire in their own language, and Jan heard: "You are charged with conspiring to overthrow the Lordship of Luana both in this world and your own, with attempting to defeat our plans for the enlightenment and liberation of your enslaved peoples—"

At which Jan gave a great shout, reached out and seized hold of a corner of the big tribunal board, pulled himself erect and with a flow of oratory began to explain: "You have not heard the truth from these emissaries of yours! It is shameful to learn what fools you have been made. They are the enslavers, these men here . . ." Jan pointed out The Voice, and three of the black-robed inner priests standing with him, ". . . these are your traitors and your plotters who have used you to overthrow a better thing by far than anything they plan, who have done the most evil deeds and lied to you—"

But Jan was not to finish. From a distance came a tremendous blast of sound, and all the tribunal stood up, the Flame Queen herself standing startled and bemused. Jan heard her say in his own tongue, "Your people have blasted the gateway!"

Now Jan saw them, the blunt-nosed Imperial atmosphere jet-ships, planing across the far flame-hued hills, and helpless to move in this peculiar gravityless field about the tribunal, watched them turn and dive above the city spread below the hill upon which the tribunal was held. This was the open air, this great amphitheatre overlooked the city below, and Jan saw now the wide round blackness that was the Gateway from this side, spew forth ship after ship.

Jan pulled himself up across the wide stone table of the open-air court, across

the surprised bodies of the judges, gathered his legs and jumped through the air, clutching the great wing-like arms of the Flame Queen's throne.

"You must listen, O Queen of Wisdom, these are vile panderers and law-breakers, these men you have chosen to aid. These ships you see charging through your gateway are from the Empire; the Emperor is a man of stern justice and good intent. You must halt this battle quickly, for we are not natural enemies. You have been misled and used. These deaths will be on your head if you do not listen and stop the battles for parley."

Her eyes, wide and taken aback, looked into Jan's pleading face, and as quickly as before her decision was evident. She spread those glorious feathers of flame and launched herself from the high platform of the open-air court. Down and down she planed, like a great and lovely being of flame and spirit, winging like an arrow of beauty and fire down toward her city below, to stop the slaughter.

Even as she neared, Jan saw the long bronze bodies of the flame-people's ships launch upward, whirl and circle and come to grips with the invaders from the Gateway. Whirl and circle, long lancing flames of ray fire weaving a pattern of death between the dancing, diving, jockeying ships; handled as though they were feathers powered with lightning by the desperate pilots. And beneath the deadly circling and blasting jets and flaming death-falls of her people's craft, the long wings of the Flame Queen speeding to stop them before it was too late.

Jan wondered how she was going to stop that close-woven speeding chaos of ray-lance and explosive missile, of speeding jet-fighters engaged in a close-wrestling dance to the death. How could it be done?

Jan shook his head. The close packed events of the past hours had given him no time to observe, to understand what this gateway and this alien people might be or what they meant to him and to his world. What was the nature of the conditions of their life and how it came that such an obviously alien environment was, for them of another world, so stimulating and ecstatically pleasant? How was it they could live here, where every familiar thing had been translated by the light and air and strange gravity to a thing impossible to understand, or to be sure that it would act as it had in a familiar environment? All these thoughts whirled in his head with an urgency and desperate need to know, the same desperate urgency with which his comrades above his head whirled and fought for their lives. And he sympathized and clutched the stone-armed throne and waited for the Flame Queen to bring rational thought to rule again in this sudden chaos.

But he was not to know, for quite suddenly his lungs refused to absorb the alien air, the whole sky whirled in a vast bowl of circling spirals of fire, he lunged forward, striking his head on the sculptured stone-wings of the seat, and fell down and down into black unconsciousness.

* * *

During Jan's unconsciousness, his scene had changed. He found himself again in the office of The Voice. Norna stood leaning nearby, her arm still a great wound. She was speaking to a line of synthetic guards, her own people. Their weapons were held irresolutely, they listened to her with eyes full of doubt and wonder.

"... you must stop your brothers fighting out there. They are dying to no purpose. The cause as well as the men for whom they fight are already lost, and it was as an unworthy and ignorant

thing for which they fought and now are dying. Even now, The Voice whom you serve lies dying in the world beyond the gateway. No man of this world can live there, and they have learned now that they cannot breathe our air any more than we can survive theirs. I have come back to you on my own feet because we synthetics can live in that world. It was synthetic flesh which was transported through the gateway at the ceremonials, to fool the people who believed in The Voice and believed the lies he told them. But there is not time for explanations. Go out and stop your brothers before it is too late!"

She was doing it. She was turning her people. They were thinking. Their faces had lost the stolid waiting for the commands of The Voice. They were turning away as one man, moving under their own will, passing out the door! Jan realized they meant to go out into that inferno and stop the robots from firing on the retreating police!

Jan saw old Fron Dagna, returned like himself from the world beyond the Gateway, step forward, and like the nobleman and gentleman he was, assist Norna 10 as she tried to follow her people. Jan got up from the floor, put his arm about the waist of Norna, supported her, too.

They passed along the wide, endless passages of the Temple, and out upon the wide terrace above the huge Dragon stairway of the ancient pile.

Skirting the long, still blazing wreckage of some slaver's fallen ship where it lay half across the wide stair, down the long stairway, stepping across the beautiful bodies of slain robots. Further on lay the red-belted corpses of the planetary police, horribly burned. Still occasionally hissed the long lances of death across the streets ahead, and Norna raised her lovely voice again, ringing out a command like a great bell,

"Brothers, no! The Voice is dead. Cease!"

That compulsion which from their very conception in the birth tank had been dinned into their minds as the source of all will, the fountain head of obedience, the very center of their souls, "*The Voice was dead!*"

Jan could see the robots turn and stop, and little by little the furious fire ahead stopped, the streets of the City of Sin began to quieten. The police beyond, hard-pressed before, now saw the white head of Fron Dagna, noted his upraised hand ordering peace. And the streets fell silent.

But now from behind them, racing around the smoking wreckage of the fallen pirate ship, came men unknown to Jan, carrying in their hands the silver rod weapons he had noted and wondered about; and they were not synthetic warriors, not the beautiful tall people of Metzner's creation.

Five, ten, a score of them, running, crouching low, came up behind them. They hurled Jan aside, picked up the fragile form of old Fron Dagna, turned to retrace their steps.

Jan realized who these men must be! These were the human hench-men of The Voice who had come out of their fortress where they awaited the success of their use of robot-guards and the duped queen of the Flame-world. They had come out to retrieve a hostage they knew might insure them safety in what they must see now was defeat.

Jan bounded up again, threw himself in a long dive at the knees of the man carrying the Regent, brought him down, all three tangling on the stone stair, tumbling down the stairs one by one.

Over the three struggling men Norna bent, one arm dangling uselessly, the other trying hard to pull the swarthy slaver from Jan's throat. Jan jerked

free, rolled aside, rose to his feet, one hand tugging the other's short barreled hand gun from his holster. With the other hand he pulled Fron Dagna from the shorter man's grasp.

The man had dropped the silver rod in the struggle. Behind him the others were nearing, bending low to avoid the distant fire of the watching police, which laced across the stair balustrade, trying to cover and hold back the score of them from reaching the three men.

One of these, holding the silver rod on a line with Jan's chest, moved the handle, and a ray of blue fire leaped out. Jan's tunic blazed at the elbow.

Jan leaped aside, dropped the Regent, who fell and rolled aside, picking up the silver rod dropped by the other.

But now, racing up to them past the great stone mouths of the Dragon stair, came the red-belted police. Jan watched the fire of the silver rods cut at them, watched helplessly as one leveled at the old Regent, made the handle movement that released the blue death fire.

Norna, between this vengeful pirate and the Regent, stepped deliberately into the path of the blue beam, screamed in pain, and fell.

Even as she fell, Jan fired across her body into the face of the man who had shot her, and cursed him as he died.

The beautiful robot-girl, as noble a creature as God's own hand had ever produced, was something Metzner could be forever proud about, Jan sadly mused, bending over her as the minions of the absent voice raced back up the long stairway to the now illusionary safety of the Temple of Love, Luana's Sanctuary.

Past the sorrowing Jan, and the kneeling Regent, past Norna about whose body they knelt, raced the Imperial police. Jan glanced up to see the progress of the air battle overhead, which he had thought abandoned after

the appearance of the ships from the flame-world, and after the breakthrough at the Gateway. He could not imagine how that battle within the Flame world had come off, or what might be happening.

No longer did the stubby Empire ships dive about the Temple, he saw afar a few of them in pursuit of a fleeing needle-shape which he surmised was the last of the vessels of The Voice in flight.

* * *

Later, after they had carried Norna into the laboratories of the Temple, Jan had gone with the fat and puffing police chief to release old Professor Metzner from his cell.

Jan was first through the old man's door and embraced him affectionately, tenderly. "Listen, Pop, you old wizard, you must have heard the noise of the battling. Norna has been shot twice, and unless you know what to do for her, she'll be dead before I could tell you one-tenth the news. Hurry, that woman is positively the most wonderful character God or man ever created, and you've got to save her!"

Metzner hurried along, Jan supporting him, to the upper floor where Norna lay in the laboratory, hovered over by the Regent and his military aides who were bewildered in the mysterious complexities of the place where synthetic flesh was created in human form.

Marveling, the group watched magic at work, as the old man, sobbing with some deep sorrow, went to work over the torn and burned body of the nearly dead robot-woman.

He placed the long, lovely body in a tank, filled it with the green fluid of his wonder-work, and with his hands immersed in the fluid, attached tubes ending in needles to the blood vessels at several points. Starting little automatic pumps, he withdrew the greenish

blood from her body, pumped in fresh. When he had finished, he set to work with scalpel and suture, and began to remove the damaged flesh, replacing it with a substance which he took from another tank. For an hour he worked, then sank exhausted into a chair.

"She may live, my Norna 10." Tears streamed from his eyes. "Forgive my emotion, gentlemen, but she is my first real child, my own first success, and her mind is not a product of these fools who stole my methods. She is what a robot of my creation should be: A superior being!"

In awe, as if in the presence of divinity, Fron Dagna bowed his head before the old man's handiwork, and the red-belted police chief removed his visored helmet.

In the silence that followed, Jan turned to Fron Dagna. "It seems wrong to intrude on this sacred moment, but I must know what happened to us all in the Flame world, and how we come to be back here in our own."

Fron looked at Jan. "I don't know a great deal. I passed out very shortly after you, but I came to more quickly. That is a strange world, and one we cannot live in. The Voice had made his people believe they could be rewarded by an ecstatic existence there, and passed the synthetics through to the Flame Queen, who had for a long time opened the gateway to the priests of Luana. It was an old tradition, and when The Voice passed through the synthetics and learned they did not fall unconscious, he used the miracle that way. Luana thought they were the same as the rest of us here. She did not know about the synthetics at all. When their ships came through, they found they could not live here, which they did not know previously. So they returned, and after we fell unconscious, they must have examined us, learned

the truth, passed us again through the gateway. Then they sealed the gateway, after destroying the machines on this side. No one but The Voice knew what they were, or how they were constructed. It was a guarded secret among the priesthood, and The Voice had most of them replaced by his own men. He slaughtered the ancient priesthood of Luana to put his own men in their positions. That is how he deluded the Flame Queen. I doubt that she will open the Gateway again, for the tribunal there will decide that only trouble and death have come of it. They seemed fearfully enraged. I watched them. They killed The Voice. They knew he had lied to them and used them."

* * *

Some days later, and a score of parsecs out of the port of Champi, the old Valiant settled down for the long run to Pulan, a new found planet circling the sun Surpena.

In his cabin, old Metzner drew two cards. Captain Donney smiled and kept his hand intact.

"It'll be pretty nice for you, running your own planet and making your own people to order. You'll be running God a close second, now!"

The old man smiled happily. "You know, that Regent, Fron Dagna, whom I have cursed at various times during my imprisonment, has managed to give each of us what he wanted most. To you, he gave the ship you asked for and the command of her. I don't blame you, I wouldn't want to stay on any planet when the space-ways can be had. The adventure of space, the lure of strange stars and new ports. I envy you, Medor Donney. You got a better bargain than I did. I have to stay in one place, now."

"He wanted me to stay and take his place, you know. But I could not. I wanted this, and he gave it to me."

Donney went on, after a moment. "I had a great respect for the old Regent. But when he produced that title to Surpena's lone planet made out to you alone for experimental purposes, then I knew what a man he must have been in the Empire of earlier days, what power he still wields. The Emperor and he see eye to eye on such things, I guess. He gets what he wants."

"He should. Hasn't he stopped the threat of an army of synthetics, robots born to fight, overrunning the Empire?"

Donney lay down a flush; Metzner looked confused. The newly installed Captain was cleaning him!

Donney grinned. "You should worry. You own a planet!"

Watching the play from the lounge, her side and breast and arm still bandaged, Norna smiled. The ship droned on.

Donney mused. Strange that the life-pattern which we think is developed from use, should develop so much more beautifully in a tank-grown human. Strange and wonderful life. Give it what it needs, and it will develop something like Norna 10—more than flesh.

* * *

Back on Conamor, in the ancient and corrupt City of Sin, Champi the Golden, little Wingfoot, dancing girl and slave, sat sadly at her table in Axel's cafe. She stared into the green depths of a tall glass of iced wask. She was so tired, so tired; not only of dancing near twelve appearances a day and never getting a moment to herself, but of waiting always for one who would never come again. Only death could have kept her Jan away. She knew, she knew, only death . . .

She could hear his words, now. They sounded so real in her memory, he might be beside her. Only a ghost could speak so without being present.

Beside her, Jan spoke again, louder than before. "I've got the money, Wingfoot. When you have your papers of freedom, we can be married. I've got a year's leave, a new medal, and a better job on Falron, when we get back. Look."

Wingfoot whirled, half falling from her chair. Jan had placed the rolls of golden di-ats on the table before her. So many of them! She could never have saved so many in a life-time!

Her three-legged chair clattered to the floor as Wingfoot hurled herself into Jan Micka's arms, stilled his lips with kisses.

It was a long ecstatic time before Jan could talk. "I received quite a large reward from Fron Dagna for my work here. Let me tell you what happened, girl! You see . . ."

* * *

On the liner for Falron, Nalna snuggled up to the long thin form of her father, Imperial Regent retired.

"I'll go mad trying to guess how you ever got the better of the Temple gang. Now, tell me everything!"

"First tell me, Nalna, what you have been doing since they took you? You have hardly said a word about it!"

"They just shut me up in an old cell, and I missed everything!"

* * *

Jan Micka brushed the cobwebs of twenty years of memory from his eyes, bent over the hand of the lovely synthetic creature Norna 10, from the now successful experimental planet Synthetica which was soon to be removed from the category "secret" and put into the one marked "famous."

Norna's voice, still music that tugged with strong fingers at the center strings of emotion, said "Before he died last year we went to the Gateway on Conamor, in Champi, to talk to the Flame Queen. She never opens anymore ex-

cept to someone like the old man, whom she knows and trusts. She has decided that all the people of this world are suspect and not to be trusted. But some of our synthetics live there, and Metzner wanted them to have the formulas to work with. A marvelous people, those winged ones."

"And has she changed her mind about the Gateway?"

"Yes. The old man made her see that all men are not evil just because some are so. There will be intercourse between the worlds soon, open and not secret."

"Norna, what kind of world is it, that it exists along with Conamor and cannot be seen?"

"It is no wonder you could not stay conscious, Jan. It is the same world, but invisible because of the strength of the neural charges. The vibrational rate is different. They are invisible because light and air and matter itself are much more rapidly vibrant and wider-spaced than on our own. Metzner has gotten the research council of Fal-

ron to finance a research chamber about the gateway, for every planet may have such a world alongside, co-incident and unknown to any. It will open to all people an immense new universe, as infinite in reach as the one with which we are more familiar."

Jan put his hand to his head. "When will science cease to devil us with bewildering new things, Norna?"

Norna smiled, "When men cease to be attracted to women, Jan."

So talking, the tall pair walked the long plastic walled aisles of the ship, looking at the wheeling stars that marked the turning ship beneath their feet, and many were the curious stares of the passengers at the Captain's gloriously beautiful acquaintance. But that was an old story to Norna, if not to Jan Micka.

And if the purser stared more than one hour away glaring at Norna 10's finger prints filed with her card of identity—why what was strange about that? She was a synthetic, after all . . .

THE END

COINCIDENCE OF A WORD



By LESLIE PRATT



THE existence of evidence on the reality of the imaginary continent of Atlantis is admittedly slight and what there is is flimsy, but—how can one account for the fact that the word appears in so many modified forms in so many different languages and concerning so many different things?

For example, there are "Atlas" mountains in North Africa. On the South American coast there is a town of "Atlan." A tribe of people living on the west coast of Africa are called "Atlantes." There is an ocean between two continents called the "Atlantic." And there is the Greek god, "Atlas."

Furthermore ever since time immemorial, there has been a legend as strong as life or death itself, which has coursed through the mind of ancient and modern man—there is a continent known as Atlantis.

Among ancient Mayan and Aztec tribes words of remarkable similarity to certain African languages have been noted. How could this possibly

have been without a bridge across the Atlantic. There was such a bridge, the lost continent of Atlantis, and it is no mere legend contrary to what any historians may say.

It is simply a matter of time, until ocean exploration is developed to the peak that will occur in the not distant future. Men will be able to penetrate the oceans' bottoms. They will be able to leisurely explore at incredible depths and when they do, they are certain to come upon more than traces of a civilization superior to ours. Even now, in museums, the world over, there are specimens of handicraft of exquisite workmanship, accountable for by no means other than the assumption that they came from some lost land.

Dredges and cable layers working in the bowels of the Atlantic Ocean have come up with strange ornaments and utilities. Sunken ships stores produced—no, no. They were made by a people a thousand fold more mature than we.

THE END



The Thing sat upon the back of the bench behind Bill . . . and talked

The JINX

By Alexander Blade

It was a horrid *Thing*—and it went with Bill wherever he went, but nobody could see it but himself. Until more *Things* came . . .

BILL wasn't much to look at. He was tall and gangling. His girl, Sarah, was very short and—well, Bill often wondered what he would ever do if some emergency arose and he had to lift her.

Another thing, Bill knew you couldn't tell people about some things—people think wrong about it.

For instance, he never told anyone there was a mysterious *thing* that sat on a limb of a tree outside his window, every night. Some days, too! You see, he couldn't tell anyone, or show anyone, because *there was no tree* outside Bill's window! There was only a paved court!

The *thing* hadn't any sex, and there wasn't any name for it in the encyclopedia. Bill looked up all its character-

istics, and there was no *thing* like that!

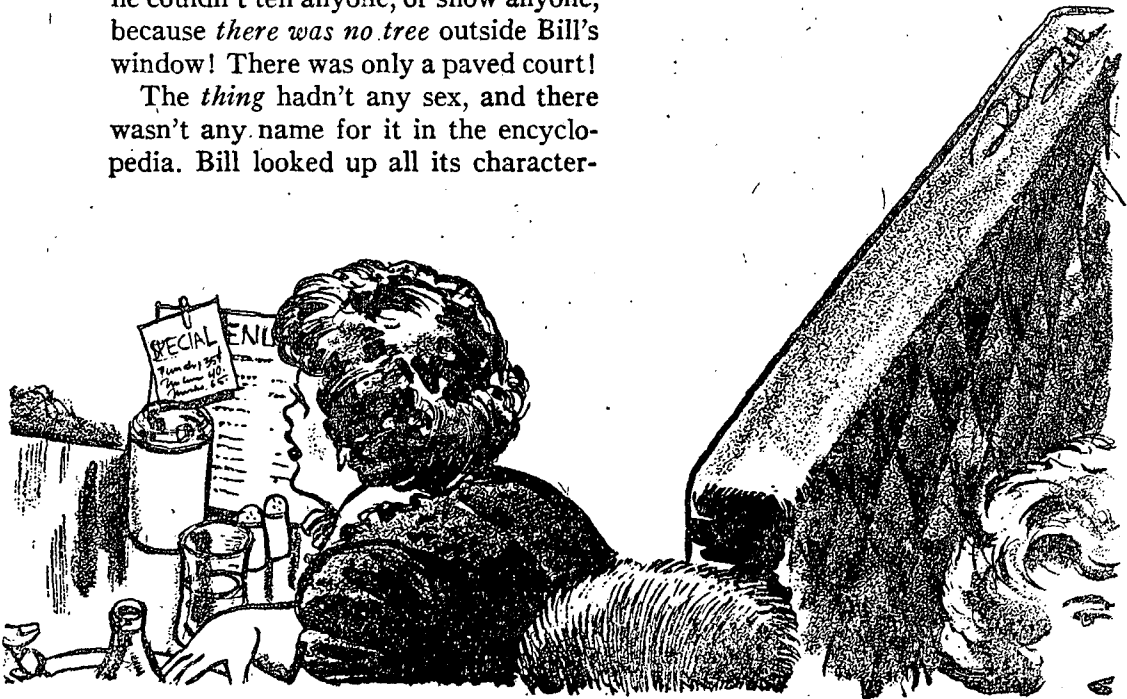
Bill didn't try to tell people, not even Sarah.

The *thing* kept talking to Bill, and Bill listened, not because its talk made sense—he knew the thing was a crazy delusion.

He listened because he pitied the *thing* out there in the dark; he knew it was lonesome and he listened.

The *thing* was talking right now!

"In the sixteenth century the *Black*



Dance of Death . . ."

Bill talked back solemnly. "What did you do then? You weren't alive!"

"Well, I'm not alive now, either. I knew a man, then, something like you. Only he was good looking, and had good sense."

"Was he crazy, like me, and listening to you all the time?"

"No, he wasn't crazy. But I discount that. I have delusions all the time, myself—do you know what I'm thinking about right now?"

"I'm listening," said Bill. "I can't help it, can I?"

"I keep thinking that I am sitting on the limb of an invisible tree! I sit there every night, dreaming! In my dream I talk to a queer kind of animal inside a house behind a window. The animal has a name. The name is Bill! Silly delusion, isn't it?"

"That is nuts! But you ought to hear the one I have!"

"Never mind, you told me before. You think I'm out here, and that I am a nameless *thing*. Well, you see, I *know* that's no delusion."

"I suppose I *am* a delusion, then?"

The *thing* cackled, a dry and ancient cackination. It said:

"You *must* be a delusion. There's no tree outside this window!"

"Oh, nuts," said Bill and went out to see Sarah.

NOW Sarah was a sensible girl who often thought she ought to have her head examined for going with a fellow like Bill, but she never got around to it.

For Sarah had too kind a heart to tell him what she thought, and she often wondered if this kindness toward Bill wasn't really affection, a kind of deep affection. But she never decided that either. So they went together, and let it go at that. Bill was well over six feet

tall, and very thin. He made plump little Sarah look a lot shorter and fatter than she was. People always snickered and whispered at this when they went out, and it bothered her. But she never said anything to Bill. It would have hurt his feelings.

If she had known that the *thing* got off the invisible tree and flitted along above Bill's head, she would have felt a lot different about it all. But it didn't talk to Sarah. Mostly it talked to itself, when Bill was with Sarah. But Bill had to hear it, and sometimes it bothered him a little.

"I'm looking for something," said the *thing* to itself.

"I never know what I want, either," murmured Bill.

"I need a new element—"

Bill didn't answer, and the *thing* flew off to look for a new element.

It came back after awhile, and Bill asked in a whisper: "Did you find it?"

"Plutonium," answered the *thing*.

"That ought to do it."

"I never heard of it before, but it sure is strong."

"What's plutonium good for?" asked Bill.

"It blows things up."

Sarah asked Bill: "Where are we going tonight? You never said, you know."

"We're going to the movies as usual. Where else is there to go? Can you think of a place?"

Sarah couldn't think of a place.

In the movies they sat and watched the news reels. One was about Bikini. Bill found out all about plutonium from the newsreel pictures.

When they came out the *thing* was still waiting for Bill.

Bill said: "That's a hell of a new element. What do you expect to do with it?"

"You'll find out," said the *thing*.

"Not that, not blow up the world!" groaned Bill, hearing more than the *thing* intended him to hear. "They'll blow it up fast enough without your help. Why don't you go back into the dark where you came from? Nobody wants you around anyway!"

"You do! You're a lonesome guy, like myself. You're glad to have me."

"You're *crazy!*"

"Not me. *You* are crazy. I don't exist, you know. How could *I* be crazy?"

"Quit mumbling to yourself," whispered Sarah. "People are looking at you. You haven't said three words to me all evening, yet you can talk to yourself. My gosh!"

"Never mind. I just hope you never find out who I'm talking to, that's all."

SARAH and Bill stopped in at a juke box lunch place, and when the music drowned out the *thing*, Bill felt better. But it took to dancing on its wings over Bill's head, cavorting about under the low ceiling, and that made Bill nervous.

"Go away! Disappear! Drop dead!" shouted Bill soundlessly, with his lips moving and no sound coming.

Then the *thing* perched on the back of the booth and tucked its peculiar head under its wing. It had a head like a man's, only it was the size of a small

monkey's. It had long ears upthrust like an ass, and fearful eyes that were holes into nowhere. Bill was glad it went to sleep.

Bill looked around, then, with his eyes and his mind free of the brooding presence for the first time in weeks.

Then he saw a startling, a frightening thing—shattering to his peace of mind, to his will, to his fragile balance.

Hovering over the head of every other person in sight was a similar, great, peculiar **THING!**

They all had 'em, now!

Bill sank into the booth seat, his mind shuddering under despairing thoughts. The *thing* was getting worse by the minute!

Roosting above his head on the back of the booth, his own particular *thing* opened one eye sleepily.

"Yes, everybody on Earth has one now, Bill. Our name is FEAR! We were all born the same day, the day the first atom bomb went off. Pretty soon we are all going to hatch another brood. The name of our children will be—"

"This is awful," whispered Bill.

"Yes," answered the *thing*, "it is. But as I was saying, the name of the new brood will be . . ."

"DEATH!" finished Bill.

"Yes," said the **THING**.

The End

THE SNAKE THAT ATE ITSELF



By PETE BOGG

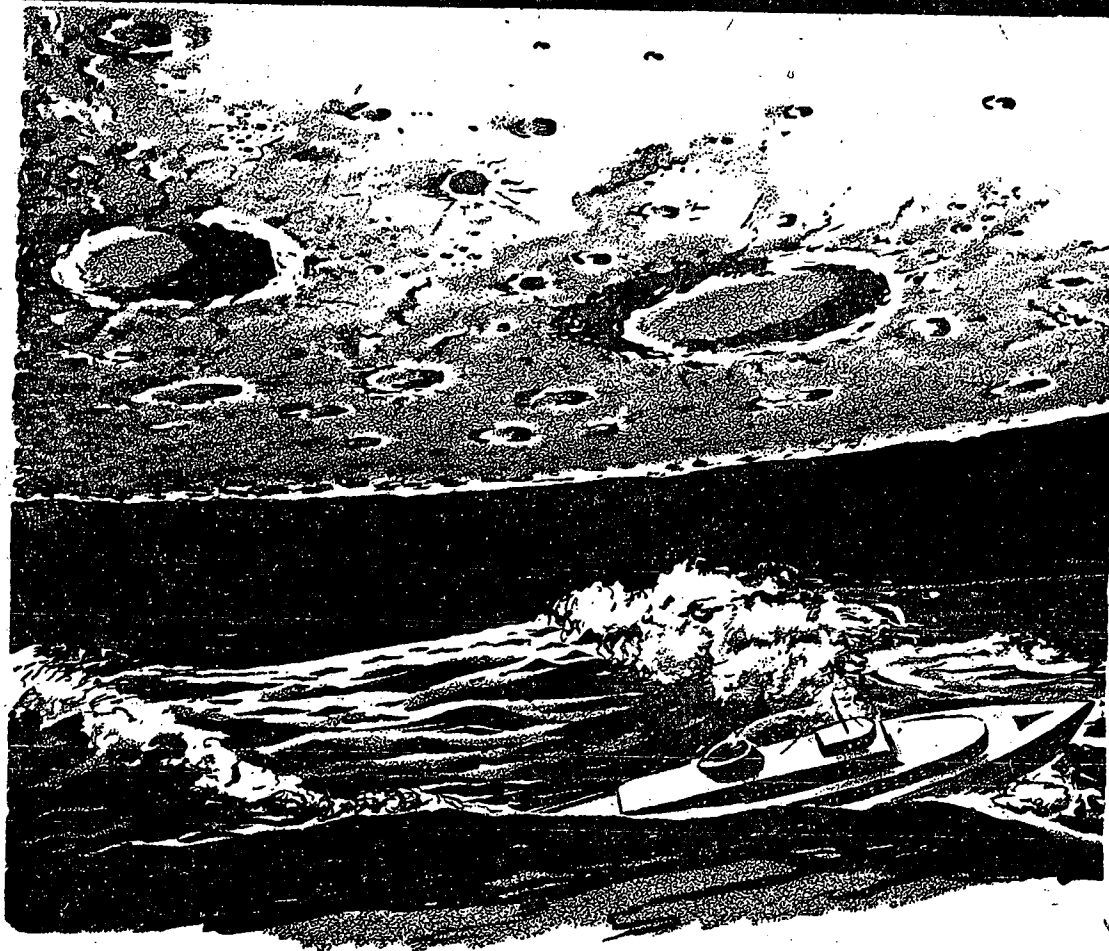


A FEW snakes with two heads have been recorded, and among these freaks was a poisonous snake that lived at the Port Elizabeth Museum in South Africa. It seems that the two heads got in a quarrel over a frog. Each head had been given a frog, but one finished before the other. Not yet being satisfied with its meal, it began to eat the half-eaten frog of the other head. Once the teeth in the roof of the mouth set into the meat, the snake cannot spit it out, but must keep swallowing. So it happened that one head swallowed the

other as far as it was possible to do so. But the head that was swallowed still showed faint signs of life, and with much care, it was removed from the throat of the other. After that, the heads were very unfriendly. The brain which had been swallowed could never forgive the other. A few days later, both heads and body were found cold and dead. The heads had struck at each other repeatedly and injected sufficient venom to cause death. This was verified by a post-mortem.

THE END

WHEN THE MOON



By FRANK PATTON

A long time ago a strange catastrophe made life a hell for the Earth's inhabitants. This is the way it may actually have happened . . .

THERE have been many startling disappearances of people from the face of the earth. Cases where individuals, sometimes even whole civilizations, have mysteriously vanished; when there is unexplainably and suddenly not a trace of them in our world.

BOUNCED



Gigantic tidal waves raced across the surface of the ocean, and the big ship was tossed around like a cork. The moon filled the sky . . .

Sometimes, they appear again, in just as startling and sudden a manner. This is the story of a man who *disappeared*, and then came back to tell us his story.

Ask Jorgyn his name was. It seemed a strange name to me, till he explained that Ask was Norse for Adam, as well as the Ash tree from which the Norse Adam was created. That Jorgyn was a corruption of Fjorgyn, usually used as Jorgenson, meaning "son of earth."

Ask Jorgyn had inherited his phys-

ical form from those ancient warriors. His body was huge; he filled a doorway when he went through it. Ash blond hair, with a ruddy face, his features were regular but strong, heavy-boned and massively carved, the granite showing through the skin. The heavy solidity of his frame was belied by his easy laughter, by the humorous glint in his green eyes.

He wasn't the type of man you would have expected to do anything as

unnatural and unconventional as to disappear. He was courting my sister at the time, the same one who is now one of the best advertising women in New York. And if you doubt this story you can look her up. You fellows interested in Fortean data can get an earful on this case.

The three of us were driving home one evening, around twilight, and we let him out of the car on the corner. His apartment house entrance was three doors from the corner. I had to wait for the traffic to open out before pulling away. Ask Jorgyn took maybe a dozen steps from us . . . and my sister screamed!

My startled eyes followed her pointing finger. You wouldn't think *nothing* could be frightening. There wasn't a thing to see where she was pointing, there wasn't a soul on the street in either direction, and yet. . . .

Scared? I was petrified! It was . . . Fortean! Or call it Shaverian. No, Shaver's theories are somewhat different. He explains things.

"He's gone. *Gone*, right before our eyes!"

"Belle, I didn't see where he went, but he couldn't just disappear—"

"You mean you didn't see? You sat right there and missed it?"

Truth was, I hadn't missed it. I had been watching traffic, yes, but I had been conscious of Jorgyn's tall, wide, powerful figure. It wasn't the kind of figure you could be unconscious of. And it *had* disappeared. But my eyes had refused their own testimony.

"We're both imagining things. Let's get out right here and check if he reached his apartment. We'll prove this fright is silly."

I pulled back six feet to the curb, and we got out. We went up to his apartment building and we rang "A. Jorgyn's" bell. There wasn't any answer,

and finally we rang the night man's bell. The old fellow took us up to Jorgyn's place, for he knew us well. Of course, there was no one there, and we looked carefully.

It is an uncanny thing to see a man disappear. The mind manufactures all kinds of explanations, and as rapidly refuses all of them. After two days we turned it over to the cops.

I didn't see Jorgyn again for six years. He walked into my rooms, after all that time, just as if nothing had happened, and asking for Belle. I hadn't seen her for nearly as long. When he sat down, I studied him. The years had marked him. There was a wide scarlet scar on his face, sweeping down from his brow to the wide jut of the jaw angle. There was a glitter, a wildness in his eye not there before. A stubborn kind of wildness, as though he was thinking, "To Hell with them all. What do they know?"

"Look, Jorgyn," I began, "six years ago I let you out of my car and you disappeared before my very eyes! Now suddenly, here you are again. What happened to you?"

He just looked at me. A kind of cool appraisal, the sort of look I would never have gotten from the old Jorgyn, who took me for granted as his friend. This man wasn't taking anything for granted.

"I can try to explain. But it won't do any good. You wouldn't understand, and you wouldn't even try to believe me. I have been a far, strange way since that night."

His big, strong teeth glittered in a grin—a kind of fighting grin—and he picked up his hat. "I'll look Belle up when I get a chance. You might write her that I'm back." He started out.

I leaped to my feet, seized him by one of his big hands. "Look, Jorgyn, I numbered you among my friends. You can't treat me this way. Sit down, I'll break

out a bottle. Man, it's been six years! You don't have to say anything you don't want to. If I ever trusted anybody, it was you. Just remember a little."

He sat down again, and his strong face relaxed into an almost easy smile. He took his drink, squirted seltzer into the Scotch, sloshed it around in a circle in his hand. Then he set it down and forgot it. He always used to do that with a drink. I don't think he needed whiskey to enjoy life. Healthy people are that way, sometimes. His eyes grew introspective, musing.

"Dick, if I tell you where I've been, it may spoil our friendship forever. That's why I hesitate. What I've been through . . . Such things don't happen to everyone . . . you wouldn't believe . . ."

"Look, you big hunk of muscle, I saw you get out of that car. Then, all at once, I didn't see you. We searched for you; we even called the cops in. We knew something strange happened."

I got the story out of him . . . at last. He sweat, he got up and walked, he sat down and got up. But then he began to talk. Once he got started, he couldn't seem to stop. After a while I started scribbling notes, and he didn't even notice.

* * *

CHAPTER I

*"Trembled the earth; through every joint,
Down to her very central point.
Flood-time, wolf-time, sword-time;
Thund, River-of-Death, runs full!
Garm, the Hel-dog, roars . . .*

"Elder Edda"

THE first thing that I noticed was different was that the sun was shining. It should have been almost dark. And it was morning instead, a bright, dew-spangled, new morning.

Then I heard the sea! You know that

lone retreating crash and roar that only surf makes.

And then I saw the sea!

Man has not seen such seas for an age!

I'll never know whether I was unconscious for hours, minutes or weeks. I only know this! I got out of the car. I took a dozen steps. And a terrible, black "swish" struck me, roared all around me!

When I woke up, I was lying on the grass, listening to the surf. That terrible swish and roar had somehow dissolved into the distant roll of the surf.

I sat up. And beside me was . . . Bryn.

You know how good, how saintly, a woman looks when she prays?

This woman was praying, with her eyes open. But she wasn't looking up. She was gazing downward, to the earth. When a woman has a lustrous wealth of red-gold hair, great slanting eyes with light, transparent green pupils, strong, high cheek-bones . . . When a woman has hands white and graceful as birds, clasped in a prayer . . . When a woman built like a Valkyrie, with the strange eyes of a witch, bends in prayer to some strange spirit within the very earth . . .

A man just looks!

She was speaking my mother's tongue, but very differently than I had learned it. The old Norse was very different. It was a long prayer, and much of it I didn't fully understand at first.

"Fjorgyn, dear Earth Mother, and you, O wise Nornir, who hold time's web in your eight Elder hands, I thank thee for bringing this stranger. Perchance he can tell our race that which will save us from the overflowing of the Death river, from the wrath of Thund that is coming upon us swiftly . . .

Finally, I did interrupt her prayer of thanks. Maybe it was that which

caused the trouble later. But I couldn't help it. For, suddenly, far over the horizon rushed a vast globe of doom. A white, glowing, glittering globe, big as a dozen of our familiar moons put together. Rapidly it swelled, larger, larger, and swept overhead with a strange soundlessness.

From each side of the vast globe issued streamers of pale fire. In its wake rushed a great comet's tail. The whole was intermingled with huge chunks of rock and ice and clouds of ice dust. Those chunks of debris were as big as mountains, tearing through the upper atmosphere, blazing with heat from the friction.

And in terror at the sudden swift apparition in the sky, I cried out!

The woman answered my cry of fear with tender voice. "It is only Mimir, pursued by the great Serpent, Jormungandr. Be not afear'd, he goes as swiftly as he comes."

"That thing is the moon! And it is falling, falling! It looks as if it is about to crash into the earth!"

"That moon, as you call it, has looked just like that since I was a child. It will not fall tomorrow or tomorrow after that. But soon it will crash into the earth. And that crash, and what it could mean to my race, is the reason Earth Mother has given me the power to bring you here."

I sat back and looked at her closely. She was magnificent, with high pointed breasts, great strong arms, a powerful warrior maid's physique. A thin mesh of net-like fabric covered one breast, stopped half way on her thighs. About her waist was a sword belt, and thonged to it was a very capable sword, the hilt bright with gold and roughly cut jewels. On her face was a weird, peering look as of one who always seeks to know more than the humanly possible things. And, somehow, I realized that here was

one who did know more than the ordinary human to whom I was accustomed.

"You asked the Earth Mother to bring me here? Could you explain that?"

She smiled pityingly on me, as one does on a child asking foolish questions.

"Let me tell you of this land, stranger from the far-time. Then you can understand my need, and the love of the Earth Mother for our people, which has brought you.

"This is a great land and a rich one, but it is doomed. The ruling city lies not far away, Heorot, the City of the Ring. We have two rulers, equal in power, our Queen Lorn, and our King Halvar Mál, the stubborn. Upon their marriage and the combining of their holdings, which were equal in extent, they each agreed to keep sovereignty over their particular peoples, at their own people's request. So long as our King and Queen agree, we are at peace. But if they fall out, peace will disappear from our land.

"Halvar is a resentful, intolerant and bold ruler! Once he loved Lorn, the Queen, but now he plays with every court baggage that catches his eye, and the Queen pretends not to notice, for she knows that a quarrel would precipitate a war, as he would try to hold the whole under his hand. His principle desire, of late, has been to dominate the Queen and overrule her in everything. Thus, his ambition to become King over the whole country perils her life, ruins her happiness, makes her miserable and ashamed. Still, she forbears to show anger, so as to avoid bloodshed. Her people love her dearly."

"What is this city and this King and Queen to you?" I asked.

"I am a Haxa, the chief prophetess of a priestly organization of men and women. We are a power among the

people, who mostly do our bidding first before that of their rulers. The rulers are jealous of us and our power, and strive always to discredit us. But Lorn, the Queen, believes in us. She herself comes of a family who have studied the secrets of the Haxa writings for centuries. She has powers like our own."

"Which powers you have very thoroughly demonstrated to me. I am curious to study some of your methods myself."

"You would never learn all of it." The bright-haired maiden laughed, and the child in her showed in the laughter, as innocent and gay as the morning itself.

"Your Haxa religion, then, is pantheistic?" I stumbled, trying to find the Norwegian equivalent for the word pantheism, but she understood my faltering words easily.

"Yes, we have many Gods, some alive and some but imaginary, or long dead."

I pondered. She had just demonstrated the reality of her "Gods" to me. Whether her power was in truth some strange combination of telethesia, teleportation, time-telekinesis, or whatever "scientific" phrases I wrapped around it, she had a power. I wondered just what the word "God" caused in the way of images and related symbols in her bright-haired head.

"This Lorn, who has 'powers' similar to your own and the Haxa's, she interests me. Tell me more about her."

The maiden's smooth face crinkled with effort as she summed up the Queen in her mind. "She is very beautiful. She is stern, fair-minded and yet mysterious, one is not sure ever what she thinks. It seems to me that she needs love, denied her by the King. She turns sometimes to others of the court, but the King will not stand for the

shame of such relations. Sends them away, or has them killed. She suffers for the sake of her people, to keep them from harm. She is a little jealous of me, I think, because I am so high in the Haxa ranks. She wishes for Haxa honor, but cannot obtain it because she is married, and our Haxa organization forbids marriage."

I started, involuntarily. Something just born inside me quivered for an instant. "Then marriage is forbidden you. Is love also forbidden?"

"Yes, stranger, the true Haxa may not love anyone but the Gods, or they will not answer. So are the teachings. It seems to me a cruel and formal lie, and many of us chafe at the restriction, but we cannot help it. The Elder Haxa have terrible powers, and would destroy us if we broke our vows."

"That's a pretty note," I said in English. "I come upon a beauty, a very Valkyrie, and find she has vowed herself to invisible Gods, may not even love me a little." I added in Norse, "That is very sad, for I feel myself in love with you already!"

She laughed. "You must control such emotions, for they could mean nothing but grief for both of us. You are a very handsome man; you must not make my path any more difficult than it is."

"Tell me more of your Haxa religion."

"We Haxa are sometimes called the 'Eyes of Fjorgyn', the Earth Mother. She is the life of the world, you know. When we have a need we explain it to her, and if she can she fills our need. It is the same with your body. When you have a wound, the spirit of your body sends little lives to heal the wound. When we have trouble, the life of the great animal sends lives to heal us. But, to get such help, there are certain things one must know. One

must be a helpful person. A Haxa cannot break the law of life, else a change will take place in her body, and no longer will the earth spirit answer her call."

I pondered her words. I could not dismiss it as superstition for the very reason that I was here, in a strange place and a strange time—with a moon overhead somehow changed into a ravening beast of terror, an awful threat tearing across the sky at express train speed. Perhaps this young and undeniably capable appearing woman had a wisdom more pertinent to the facts of life than any I had absorbed in my bookish studies. Perhaps the will-to-truth in her eyes was a will that had been answered many times by some mightier mystic spirit that she called the Earth Mother. Every religion I had ever read of had an equivalent for the Earth Mother.

"And what is this need which caused the Earth Mother to answer your prayers? The falling moon?"

"That is the need."

"But what can I do about that?"

"You can tell us what lands survived the shock, since you have been brought from the future time. When we know that, what places are safest from the coming earthquakes and the great deluge that even now rises ever higher and will soon sweep across all the lands that now shelter our race, we will migrate there."

"I am afraid your Earth Mother has made a mistake. I have no knowledge of a falling moon or of a deluge. I cannot help you."

"She has made no mistake. You will see. Meanwhile, come with me and meet my people."

CHAPTER II

*"Joyous then was the Jewel-giver,
hoar-haired, war-brave . . .
and the high-born lady handed the cup.
Ring-graced queen, Helming's Lady . . .
"Beowulf"*

THE HAXA, Bryn was her name I learned, led me some distance to a path. The place where I had awakened was a natural grotto in the rock, facing on the sea, and as we came out of it into the forest, I gasped, for such forests are unknown to men of our day.

The trees of that time were to our trees as our Redwoods are to weeds. Some change must have taken place in the general chemistry of nature since the deluge, to make of plant growth a lesser thing. Vast trunks towering up and up, eye bewildering aches of mighty limbs cathedraling overhead. I could understand this woman's worship of an Earth Mother producing such trees. Yes, there are things about life we are not taught today.

The path led shortly to a great highway, and waiting there was a team of horses and a high-wheeled, wide and canopied kind of chariot. It would have held half a dozen men.

The great chariot swung out on that broad highway. Fast and hard Bryn drove the horses, her hair flying, bright in the sun. I stood beside her, proud to be so honored by her company. Far down the steep mountainside lay a city, and the road in great S curves swung down ahead of us.

That city! It was like nothing built by moderns. It was strong and square, moat-girdled, an ancient seat of power. Above it streamed the long, colored pennons of the Lords sheltering there; about it on the wide greens sported horse and rider. Great wagons of goods and a stream of people moved in and out of the wide gates.

"Who are these people of yours, this race whose death you fear in the future?"

"The Geats we are called. We are a part of the race called Etin. This city before you is named Heorot, the City of the Ring."

"The City of the Ring? Why is it called that?"

"The Ring is a very ancient heirloom, from the time of the Giants. It is supposed to be a finger ring of a very great giant of the past, and it does possess mystic powers. It is very large, it takes up the whole wall in the palace throne room."

"You don't believe anyone ever had a finger to fit a ring like that, now do you?"

She laughed. "And if I did believe it, stranger, would I tell you, who cannot believe even that the moon is the moon?"

"You would have to show me that giant, in truth."

"And if I did show you his bones?"

"I would think it was a whale, and you were ribbing me with its ribs."

The blood was rising hot in me with excitement and the nearness of her strong womanly body. The road fled beneath us, the mighty trees arched the road with an alien and terrific beauty, the air was wine. The city drew nearer.

She sang—a strange song with the ring of ancient runes in it, a weird song of magic and love and many words I could not understand. Thrilling to me, for I felt the sound of my forefathers adventuring in it, the sounds of battle and storms and the shipfaring over the sea-waves. And her laughter above, a wild laughter, free and untamed and splendid as a savage harpist's well-struck strings.

The chariot rolled through the gates, and all about me were her people, and I felt strangely at home at the sight of

them.

I was wearing that sober grey business suit in which you saw me last, and the sight of my clothes brought forth many a stare and question. But to all their curiosity Bryn gave only silence, driving on through the press of the crowd with a singular disregard for safety. Those were a warrior people; both men and women wore weapons and some wore armor, too.

Above the wide street of shops and small dwellings reared a great hill, the summit of the mountain's wing upon which the City of the Ring was built. And on the hill clustered a score of great structures which I surmised were the homes of the Rulers. Up this hill the team's hooves clattered, stopping at last before the greatest of the palaces.

"Let me do the talking, Ask Jorgyn, for I know what is pleasing to these proud ones, and if you should do the wrong thing, or let fly the wrong words, it could mean disaster to long laid plans for our people. Remember, these men can decide the future of this race, and that is more important by far than any little pride or shame or petty emotions we may have. Let me lead, and you follow only in the talk."

We stood for a moment before the mighty pillared portico, for . . .

Over our heads that terrible procession of doom was speeding once again! It could not have been four hours since I had first seen the sight, and even though that sight had prepared me, yet an exclamation of fear and astonishment, of unbelieving awe, rose to my lips. Rapid, incongruously soundless, white as death and rimmed with strange, white-fiery streamers, the falling moon swept overhead. Half the sky seemed obscured, the sun paled to insignificance, the great tail of it flared and writhed in seeming pursuit, as a serpent straining after prey, the blocks of earth

and ice in the tail taking on the appearance of the mottlings of the serpent's back, immersed as they were in icy mists; or were they fire from the heat of the great mass speeding through the first faint outlying layers of earth's atmosphere?

To a man who has always seen the moon serene and placid, gliding her lonely way unperturbed and regular as the hand of a clock, this sudden metamorphosis of the well known luminary into a terrible threat, an ominous descending dragon of death about to engulf all the world in its own destruction, was overwhelming. My breath came rapidly, and I looked to Bryn, the strange Haxa, or witch-woman as I thought of her, for some aid or comfort in my mental extremity. Her bearing was cool. She had paused to watch the terrific spectacle, but her eyes were detached and inwardly peering. She was thinking of other things. As the vast pock-marked face of doom passed on overhead and the great serpentine streamers became smaller and smaller toward final disappearance, she moved on again toward the wide gates of the palace.

I followed her, looking a bit askance at the heavy armor and bright steel weapons and glittering mail of the guard that flanked the gates. Their weapons were curious to me, for they differed from my notions of what these men of the pre-deluge days had used. There was a finish and polish to them that spoke of an age of culture protected by such weapon wielders. Their shields were round and rather large, they leaned against the wall behind them. Their spears likewise were not carried, but leaned beside their shields in readiness to need. Their swords were a good arm's length and broader at point than at base. Delicate inlaid tracery of gold and silver shone every-

where on the polished surfaces. Their rosy faces and bright curling yellow hair told me these were the forebears of the ancient historic Norse. Or were they? There was an alien polish about them; an age of custom and usage had fixed upon them a stamp I could associate with no one race or time.

We moved down a noble hall, scores of richly clothed people passed us in both directions. The architecture was stupendous in size, seeming to have been built by giants. But even so, I could not figure how such huge blocks of stones were assembled into such intricately braced vaultings and pillars. Then we passed into the audience chamber.

I gasped. It was not the milling throng of courtiers, the silken-sheathed women mingling with the gold brightened brocade of the male tunics—but the wonder of the building of that chamber. The intricate stone parquetry of the floor provided a base, set the theme for the pillared glory of that overwhelming piece of art. The base of each pillar was ringed with a shallow bowl, into which scented water, colored variously for each, played constantly. The walls were carved delicately and beautifully with flowers, plants and little beasts of all kinds, up and up till one could not tell where the carving left off and the stone lace-work of the arching ceiling began. Centering and dominating the magnificent room was a great double throne seat, framed and made majestic by the mosaic wings that flung out from each side of the throne, great prismatic wings of some bird unknown to me, or perhaps to any man. The feathers were set with gems and colored stones, and shimmered brilliantly, spraying out and up as if in motion. And the perfumed air layered slightly with the fountain mist, lent an illusion of gran-

deur and might and majesty.

Alone on the double throne seat sat a woman, brooding, her chin on her hand. The other hand toyed with the head of a great wolfhound. Mist-thin, her single garment; girdled with a wide, flexible band of jeweled and linked filigree. A dagger hung, magnificent upon one shapely out-thrust thigh. Her eyes followed us speculatively as we advanced.

Me she eyed most, wondering, though her bright green eyes shot a feral gleam upon Bryn's glorious hair and confident brow. Curious she was, but too proud to show it overmuch.

We came to a pause, necessarily, for before and beside the throne were lined a row of tall warriors. Not the least impressive part of that row of figures were their beards, all alike and all red as flame. They were the only men in the room wearing helmets or head gear of any kind, and their mailed and armed might contrasted curiously with the silk and brocade of the court; gave acute evidence of the power vested in she who sat upon the throne.

Bryn made a low bow upon one knee before the woman, but I made do with a slight bow of my head. I could not bring myself to a greater obeisance. Some ancient hatred of royalty and all the meaning of pomp and power rose up in my spine and stiffened it. Her eyes shot a glance at me that sent a shiver through me, but I did not get down on any knee for any queen that day.

"I have brought a man from the far-off time beyond the fall of Mimir. He can tell us all we want to know if we can understand and act upon what he can inform us. He does not know that he knows, but we can find out from him where the race must migrate before it is too late. The time grows fearfully short, Queen Lorn!"

"I did not believe you could do it."

The Queen leaned forward, her high breasts thrilling above me as I looked into her eyes. She was sounding me, looking into the depths of me, and I realized ever more strongly that these people had arts strange to me. As we stood thus peering into each other's eyes curiously, and the thrill of her pulsing in my veins, heavy steps neared us, a burly body pushed by the guard, mounted to the double throne, seated himself beside her.

I turned my eyes to him, but it was not so easy to turn my mind away from that striking, regal figure of Queen Lorn. Her eyes and her beauty had been working a magic in me even in that short time I stood before her.

The man beside her was big. Square headed, brutal jawed, the shaven blue jowls and black brows, the width of the shoulders and the hips' leanness bespoke the masculine. The male with no touch of the feminine to soften it. Gloomy eyed, a dark majesty about him flashed in his proud eyes and hung in the curve of his heavy brows and in the curl of his dark red lips. Even the impatient bristling of his mustache betrayed the sudden, fierce spirit that was unused to seeking any counsel but his own. He struck me as a man never broken to the bit of another's leadership. Such I had known before, and they make difficult men to avoid crossing.

He had caught the tiny flame that had passed for a moment between my eyes and the sultry, veiled eyes of his Queen. He chose to ignore it, but I could see he had marked me for his displeasure. Certainly not an auspicious beginning for me.

The King's voice was like his body, big and brutal and yet cultured, with an overweening pride and a carelessness of whose ears might be offended in

every syllable.

"Who is the stranger, Bryn of the Haxa's, and why do you bring him here to us? Have we a need of wandering beggars? Or is he some minstrel you have found to amuse us with songs of a strange land? His clothes are rather amusing to my eyes. From whence comes he?"

Bryn turned her eyes upon the man with a desperate intentness, as though by force of will and by the magic of summoned words she would beat down the wall of his obtuse, male callousness and reveal the great thing she had done in bringing me through time—reveal it to him in such a way that he must accept the truth. And I knew she would fail, even as her words marshalled themselves in perfect battle array, and poured from her impassioned lips in a weird, thrilling storm of logic and appeal and courageous mental struggle.

"O my King, you must recall the teachings of your father, how he told us that the day would come when our waxing moon grew great and blotted out the sky, when the tides of the seas would rise mountain high and smash our cities, drown us all in the waters of the deep. Long, long, have I striven to solve the mystery of our future, that our race might survive. Long have I cast the runes and made my prayers to my living Gods, long have I labored and studied. You must know the ancient prophecy, that when the time of the twilight was upon us, there would come a man to lead us out of death's path and into safe haven. This is the man, our Mother Fjorgyn has sent him to us to reveal the path of the future, that our feet may find a way to safety in the coming night of Death. Listen, now, to him, and heed, or the City of the Ring will perish with all its people!"

The square-hewn face looked upon

Bryn's imploring countenance mockingly and pityingly, as upon a sick child asking for the moon.

"Too long have you spent alone in your cavern with your herbs. The smoke of your rune fires has addled your wits. What you need, Bryn, is a man to beat some of that nonsense out of your head and teach you the proper way of a wife. This man our savior? He looks more to me like some wandering play actor who has no fit clothes and has donned some of his mummery rags instead. Away with you, witch, I'll have none of your foolishness."

I suddenly found myself in vast sympathy with the lovely Bryn, pitted against the obtuseness that has always been the main obstacle of men of science, whether that science be in the guise of magic or the more modern clothing of orthodox texts, test tube and microscope. I stepped forward and bearded this lion for her, though well I knew there would be little good come of it.

"Listen, O ruler, strange to me as I am strange to you. I cannot allow your scoffing to pass unchallenged. For I was whirled from my own world back through an age, and set down here beneath a sky gone mad, in which my own quiet, placid moon raves like a monster of Hell. I have had to drop all the teachings of which I was so sure, and bow to this woman's superior knowledge of the nature of life. I can tell you that my being here is a great wonder. Take my words for their true worth, and let your people begin a migration as far northward as their feet will carry them, before that mighty falling rock touches this earth with its terrible weight. For sure as the sun rises, that moon is falling; and any man knows that such a collision will be fatal to most of the life on earth."

At my words, a silence had fallen on

the assembled court. The green, bright eyes of Bryn looked at me gratefully, encouraging and thanking me. In those eyes, I saw the vision that drove her: The life of all these people of hers—and from what I had seen, they were numerous—rested on her shoulders. She was conscious of this terrific responsibility. The Queen, Lorn of the City of the Ring, leaned forward, half rising from her seat, staring at me strangely and with a fear rising in her eyes that I could not fathom. As my voice ceased, a silence, ominous and pregnant with thought, fell upon and through the great chamber, and every man's eye sought his neighbors questioningly. I could imagine how my words must have struck them. Yet, I knew enough of human nature, to know that no matter how much of an impression I made, it would not last or bring any real response. For I realized what would happen if one of these men could step into the White House in his antique costume, prophesying sudden and terrible doom from a falling moon. Why, he would be laughed at by every savant and astronomer in the country. And so, it seemed, were Bryn and I to fare.

The laughter of the King broke rudely upon the silence. "I know not who you are, stranger, or why you think you can come here and tell us what will be. It is not our way to question the Norns, who hold the future of all in their hands. If they plan to destroy the whole weave of our lives, well and good. We cannot avoid doom by listening to every mad passerby with a new theory to expound."

Bryn tugged at my arm. Whispering close to my ear, she said, "Come, we have made our attempt and it has failed. We will get nothing but mockery from him, and the others are not convinced enough to revolt. Every-

thing depended on his understanding, and he has none of that. Come, while we are still allowed to leave. His laughter may soon turn into anger. Come!"

She murmured to the Queen, "We have warned you, and our duty is done, O Queen Lorn. Goodby, and may the Gods watch over you. I cannot!"

Then, we passed out of the court and out of the mighty palace. I looked back once, to find the Queen's eyes following us, and the King once again down among the mob, bent over the hand of a maiden in a shimmering blue transparent robe.

Outside, Bryn mounted once more into her big rough chariot, and I beside her. We clattered out of the city and along the same highway by which we had entered.

"Tell me something about that King and Queen and this City of the Ring. It is interesting to me," I shouted to her above the rattle and jounce of the heavy vehicle.

"I will tell you all later. I have not the heart to shout at you now."

I thought back to Joan of Arc, who had likewise gone to her ruler with mystic words on her tongue, and had at first been turned away, only later to be given command of the armies and made a great figure. I shouted this tale to her, bit by bit, as we drove along, and she listened intently.

"And how did this maid convince the French of her knowledge and her value? How did she go about becoming a leader?"

"She won over the poor people, as I recall it, and then the leaders had to have her on their side because of her large following."

"That I have done already, as you will see. I have a following; and they are not few. Now that the King has refused, I will take my own people and travel in the direction which you think

best. And precious little will that City of the Ring have to eat when the farmers pack their wains and follow Bryn of the Sea-caves to the North."

CHAPTER III

*"Warriors gathered the gift-hall round,
folk-leaders faring from far and near,
O'er wide stretched ways, the wonder to
view . . .*

"Beowulf"

BRYN was swinging her team off the great highway to the little worn path back to her grotto; when the sound of hooves and shouts behind us caused her to halt the horses. Hard-riding behind us came a cavalcade of riders, which reared to a halt beside our chariot. I was startled to see the veiled figure of a woman among the score of heavily armed and armored riders. As Bryn dropped the reins and turned to the company, the woman dropped her veil and I saw it was Lorn, Queen of the City of the Ring.

Her voice was pure music on the noon air. "O Bryn, I would have serious counsel with you and your companion. Forgive my rude haste, but you can understand my need for understanding. I am not in sympathy with my co-ruler's treatment of you. I would do what I can to aid you. Thus, I must know something of what you plan."

Bryn's eyes were suspicious. Her voice faltered for a moment, then rang with perfectly acted truth, "I—I have no plans, O Lorn, my Queen."

"It is time you made some, then. Look back along the way you came from the city."

Bryn shaded her eyes with her hand and looked back along the road. The great S curves swept down and down and out upon the vast upthrusting rocks upon which Heorot, the City of the Ring was built. All along that road were

the black figures of men and horses, of wagons and chariots. Bryn looked a long time, and I knew she was thinking not of the horde of people filling that road in the distance, but of this woman and her armed guard, and what she might mean to her.

"What does it mean, all those people coming this way?"

"You know well enough, Bryn, but you choose to show ignorance. I have come to warn you that Halvar, my mate, will not brook what you plan, will strike before you are ready, before ever you can leave his domain. You must understand that no King can sit idly while some prophet like yourself leads his people away into the wilderness."

"What you say is perhaps true, my Queen. But what have I to do with these people?"

"I have followers, too, Bryn. They tell me many things you would never guess I knew. I come to you in mercy, to offer you a place of refuge before the King strikes and all is lost. For I believe, too, that a great catastrophe is coming and I, too, have pondered what the meaning of the change in placid Mimir above might mean. I have talked to my own Haxa's, and I know what the prophecies are. Will you take shelter in my own castle of Arnberg, or will you wait for the men of Halvar to imprison you?"

"I must take counsel, Lorn. I cannot hide from my people now."

"There is no time for that. Why do you think I spurred after you in haste? Among these people swarming along this road are men of the King in disguise. When you speak to them of what must come to pass, they will come forward and seize you as one who plans to ruin and weaken the land of Heorot. What can you do then?"

Bryn turned to me, her face a study

in indecision. "Can you help me, man from another time? What shall I do?"

I looked at the smooth, lovely face of the Queen, and wondered what perfidy and double dealing might perhaps be hidden by the expression of urgent solicitude.

"If you accompany the Queen, you have placed your fate as well as your coming power in her hands. If she plays you false, you are lost. But, if you trust in your own people, some among them may set upon and overpower the King's agents, and thus allow you your freedom. You can arrange a guard, now that you are forewarned."

I turned to the Queen. "It seems to me, unknowing your character or what might be hidden in your words, that it would be safer for Bryn to have speech first with her people. If struggle comes out of it, will you keep your offer of refuge open to her, so that she will have a place to flee?"

Impatience was on Lorn's face, but she said, "We will await you in the forest. After you have had this talk with the people, if you escape, come to me, here." The Queen gestured with her hand toward the dark depths beneath the mighty trees, where an army could have concealed itself.

As they cantered off into the gloom of the trees, Bryn whipped up the team, heading toward the grotto where I had first met this world of the past.

Behind, upon the highway, the black motes of people had become larger, distinguishable as a motley collection, a mob of every rank. I was anxious and curious to hear what would be said when Bryn faced them in her own surroundings.

Bryn left the team and chariot where we had first found them, and I followed her toward the high rocky coastline. She did not stop at the grotto where she had been praying when I "arrived." She

continued on along the crest of the high cliff beneath which beat and boiled a sea whose level had fallen fifty feet from the point at which I had first cast eyes upon the surf. I realized that that speeding, low, vast bulk of moon must cause a tremendous girdle tide around the whole earth. How tremendous this swift rise and fall of the sea had become, I had yet to learn.

Presently, we came to a series of openings along the top of the cliff, and about were scores of people, farmers by the look of them, though here and there the armored erect figure of a warrior showed. Bryn waved her hand to these waiting people, and passed into the third of these cave openings. I followed her into the great rocky cleft, marked by tumbled boulders which several paths circled, branching off along the cliff top.

Inside were a dozen grey-robed figures, busy about a series of fires, over which hung cauldrons. Meat was cooking in some of the great iron pots, and along the cavern wall hung the saddles of half a dozen deer. The cavern was huge, leading back and back into the dark, and marked at intervals by low curtained openings which I took to be sleeping chambers. The place had all the marks of a living place of a large company. Bryn stood beside me in the center of the wide cavern, and after a moment the busy figures left their work and gathered round her and myself. Most of them were elderly people, their sex half hidden by the loose grey robes of coarse weave.

"I have brought to you the man from the future time for whom we have prayed. The time we have dreaded is upon us, and no more can we wait for the whims of nature to confine themselves to our wishes. Instead, we must flee the coming floods and earthquakes, and this man will be our guide. Along

the road behind me throng the people of Heorot, to learn if this man be really what I have said he was. We must meet them, tell them what must be done, to prepare for an immediate migration."

An old bent figure stepped forward, peering into my face. His head was nearly bald, and extreme age had seamed his face and humped his back. But from the age-ravaged skull blazed a pair of fierce eyes above a beak of a nose, and the jut of his chin was still significant of will and spirit.

"Stranger, tell us of that time from which you come, so that we may know there is no doubt about this marvel."

I knew so little of their life, there was almost no way to tell him of modern life, for lack of objects of comparison in my mind, of parallels to draw for him. But I tried, only to see disbelief in the marvels I described such as the automobile, the airplane and the radio. If I had but known the marvels of their life, I would have still further estranged him, for I could not have believed, either.

As it was, he shook his head and stepped back from me, frowning. I knew he was in doubt, for such things must have sounded pretty fanciful. If I had known that his doubt arose from the lack of progress such as he expected to take place in the future, I might have explained satisfactorily how my civilization had developed after a long period of darkness.

Between him and Bryn a furious debate began, which she won hands down, and the cheers around us told me that Bryn had things in her hands.

Then they brought me a bull hide, stretching it on the rocky wall with pegs, asking me to show the land distribution in my own future time. I rapidly sketched in the continent of North America, hoping that my sudden translation into another time had left my

position on the globe the same.

Now, the real debate began, and all the while outside I could hear the tumult growing, as more and more people arrived to view the stranger who was to lead them to safety. The sea roared higher and higher, too, as the moon made her sudden round, the spray dashed into the very mouth of the grotto, and a while ago we had been looking down on the sea's surface from a hundred foot height. I realized that the girdle tide of that speeding, insane moon must soon reach such proportions as to sweep clear around the globe, covering anything and everything with a resistless sweep of turbidly boiling, swirling water. Bryn was right. The time was growing very short for life on this part of the globe.

The increasing racket outside the grotto finally reached the proportions of a riot, and Bryn had to make an appearance. I backed her up, and my figure in the grey business suit made such an impression, that a complete silence fell upon the throng stretching along the cliff top. There were far over a thousand people there. The paths leading from the distant highway were filled with the steadily augmenting flow of farmers, warriors and tradesmen.

Bryn mounted the flat top of a great boulder, and I climbed up behind her. She held up her hand and began to speak, her voice a symphony of modulated prose, ringing with fresh courage and clear meaning.

"My people, the time has come when we must leave our homes or perish from the ever mounting sea. This man beside me has been sent us by our Fjorgyn, our Earth Mother, to lead us to safety. He comes from a time in the future, when the moon will have again returned to her quiet rounds far above us in the heavens. All I have to tell you is this: If we do not follow this man

to the northward, if we do not leave this doomed zone of earth, we will die."

I stepped forward, for I realized that I must at least try to make them understand the necessity for migration, the need to try to retain life so long as life remained, the absolute inevitability of what was coming. During the ride, I had been thinking of the moon, trying to understand how the moon could fall in one period of time, and in a later time be found once again high in the heavens. Now, I took two round stones, one much bigger than the other, and tied each upon a string of equal length. These two strings I held up before the multitude. The string swinging the smaller stone I gave a sharp whirl, so that the stone took up an orbit around the bigger stone. The gravity pulled the little stone closer and closer to the bigger one, which was hanging still and slowly turning on its string. As the stone whirled closer and closer to the bigger stone, it struck the bigger stone a glancing blow and bounded off; to take up again its round-and-round motion. This it did three times at intervals, and as I lowered the strings it was still whirling, prepared to bound off the bigger stone again.

I explained, "You see how the moon descends by the examples of these stones. It will strike earth, and the great weight and the turning of the earth will cause it to rebound so that it will return to the heavens, only to descend again sometime in the far future. It has probably done this before, it may do it again many times, at last to rest here and remain as a part of earth. We cannot await this approach. We must go toward the pole of the earth, where the shock and the tides will be weakest. We must prepare to face cold and earthquake and privation and hunger. We must fare ever northward and northward. Some of us will live, to

bring the race of man again southward when the moon has retreated to its orbit once again. I will go with you and aid you with what knowledge I have."

As I finished, I stepped back to Bryn's side, resting my hand on her shoulder to show that I was her follower and friend. A buzz of talk followed, growing into a clamor of argument everywhere in the gathering. I could see a dozen men doing the little demonstration of the stones-on-strings for each other, excitedly pointing out the inevitability of the fall and the rebound; and pointing up to the monstrous face of "Mimir", the moon. The moon had shoved once again above the far horizon of the mounting, terrible sea, dimming the sun, bringing fear and terror and a horrible sense of inevitable doom with it to the whole face of the world. Great and greater it sped, seeming to blot out half the sky as it raced once again overhead.

As Bryn and I stood there, from every side of the gathering single figures of armored warriors, mailed and helmeted and bearing naked swords, pushed forward, so that in minutes we were surrounded by a good fifty warriors. I glanced at Bryn, murmuring, "If these are the King's, we're sunk."

She smiled confidently, "These are my men. They know their King, and they know what he will attempt."

Close on their heels came other warriors, and I recognized the great black Ring-and-Eagle symbol of the City of the Ring upon their tunics. These pushed forward roughly only to come to a halt before the suddenly formed ring of steel and grim faces around Bryn and myself on the rock.

The leader, a tall, red-haired man with a scarred and confident face, his armor richly chased with gold, brilliant with gems and bright silk over-tunic, halted for a moment before this evi-

dently unexpected barricade of steel and muscle. His voice was loud, but not so confident as his will would have it. "Stand aside! The Haxa is under arrest, by Royal Command!"

"Show us first the Royal script and seal, show us your order for her arrest!"

The man laughed. "Hah, think you I am a child? Here is your paltry paper, do with it what you will. I come to take the spying stranger and the traitorous Bryn back to the palace."

He handed the man who had spoken a roll of parchment, and began to push through the circle of warriors. They hurled him back roughly, and swords sprang from half a dozen scabbards, began to weave back and forth between the two lines of men. But no strokes were struck. It was only threat and counter-threat.

I turned to Bryn. "If we slipped away now, Bryn, it might save bloodshed. Why do we not join the Queen?"

"Wait still a moment. I would not like to leave my loyal warriors without a word."

We could hear the angry exchange between the King's men and the warriors protecting Bryn.

"We intend to take her, we have our orders!"

"You will leave your bones on this cliff if you touch a hair of her head! Our Haxa has lived here all her life, we know her well. This charge of treason on this paper is a lie. We will not have it. Go back to your King and say that unless he rules with better forethought than this, we will have a new ruler and a better."

Murmurs from the pressing mob followed: "... That would not be hard, to find a better." "... Tell him if he wants our Bryn to come and get her himself. You cannot do it alone!"

Sensing the hard and unanimous will of these people, most of whom bore

weapons of one kind or another, the scar-faced leader drew back from the flickering line of swords that barred his path. He and his men stood aside from the crowd, taking counsel among themselves what best to do. Bryn seized the moment to slip down from her perch, and I after. She stepped to the stalwart who had flung back the King's officer, putting a hand on his shoulder and trying to express her gratitude.

"My Hrothgar, my heart is glad to call you friend. But it were better I slip away and hide until they are gone. I want no bloodshed."

"Before the doom that is coming, what are a few lives, my priestess? I know what will happen quite as well as you. That is why I am on your side, against our fool of a King. He cannot believe that the future holds only death for this land of his. He cannot give up his wealth and his people, he is too greedy to admit that he must lose his all. But we cannot allow ourselves to die because he is stupid. We know the truth."

From every side a chorus of "Aye, we know what comes for us all!" emphasized his words.

"Tell him where we plan on hiding, too. It were best that some of your own know where we go," I counseled Bryn. Even as she drew the man Hrothgar aside, the King's officer called an order, and he and his men mounted and rode away out of the paths of the numerous cave entrances. From every side came jeers and cat-calls. It was plain that they were vastly unpopular, and that it pleased the crowd mightily to see them thus frustrated.

Hrothgar came to me, then, with Bryn beside him. He said, "I myself trust our Queen above all the nobles of the City. I will gather my men and ride, too, to her castle. That will place her in a position where she cannot re-

fuse to aid us when trouble comes. I know her nature, and I know that in time of need, she will become as one with us against the King. And as sure as it is that Mimir descends, just so sure is it that battle and death will come before we win free of the city of the Ring. Come, it is politic we join forces with the Queen and begin to amass strength as rapidly as we can."

Bryn had no more to say to Hrothgar's counsel, and it was evident to me that this Hrothgar would automatically lead the fighting men, with only myself and Bryn and the Queen to balance his leadership. To me he looked capable, honest and fearless, albeit somewhat slow of speech. I would have chosen him anywhere as a man to have by my side in a brawl, for his massive arms and great hands were smooth in motion, his jaw and heavy face built to absorb punishment, his shoulders wide and his whole body capable and assured in bearing.

In a short time this body of men, now augmented to near a hundred, were mounted and ready. Horses were brought for Bryn and myself, and with a few muttered words to the old "Haxa" who had questioned me, Bryn led the way. Beside her rode Hrothgar and myself.

Through those tremendous tree columns upholding, it seemed, the weight of a world, we rode. A strong, silent company of men, and behind us were gathering ever more people, making ready to camp there in the forest. It was evident to me that they would remain there in great numbers until the time came for the great migration northward. It was all too plain, I thought, taking a last look at the tumultuous vast waves of the sea, that only swift flight could save these people. One did not truly need a "Haxa" to tell one there was no safety to be had when

the tides rise and fall a hundred feet every day and every day higher.

Overhead, as the mighty mass of tree limbs reaching up and up almost obscured it, I caught a glimpse of the vast face of the terrible moon rushing nearer, trailing like great spectre-serpents its attendant ice-powder trails and blocks of ice and rocky debris torn loose by the increasing stress of the gravity of earth.

As we progressed into the deeper gloom of the forest depths, our horses' hooves were completely muffled in the soft decayed leaves. It was like riding on clouds, without sound. A figure, his tunic bearing the Ring-and-Eagle, rose up before us, brought a horse from the shadow, mounted and nodded to Bryn, then rode off to inform the Queen. We rode on in his path.

She came to meet us, shortly after, surrounded by a score of her men. Neither suspicious nor too friendly, she made a better impression upon me, perhaps because of Hrothgar's words. There was a magic in her face, a dark witchery in her red curling lips. She was all woman; while Bryn was all youth and maidenhood, and mystic eyes deep-set in a clean apple-cheeked face.

As different as day and night, they were, meeting there, but the Queen was very gracious to Bryn, and Bryn a little awed by her nearness and her majesty.

Her counsel jibed with Hrothgar's, so that it seemed good to us to gather forces at her castle, rather than upon the cliff top, swept by the sea winds which grew ever wilder and undefendable against sudden onslaught. So it was decided, and half our force rode on with us as guard, the other rode off to gather the people at her castle of Arnberg. I knew that all these men felt gratified to find the Queen upon their side in this. All I felt was that it was important to get started northward im-

mediately, toward the highest ground that could be found. If I knew anything about the laws of bodies in space, these two would crash rather suddenly when they did; the moon would leave its swift orbit in a sudden downward plunge—and in the crash nine-tenths of the life on earth would perish.

It was a magical ride, to me. Placed by chance between Bryn and Lorn, the Queen, they began to take an impish delight in questioning me and expressing profound disbelief in everything I said. Subtly, they made me feel very much at home, and very much trusted, too. If I had known a little then of their magic, so much superior in some ways to our own "science," I would not have been so ready to expound the virtues of modern mechanics.

"Do the maids of that future world of yours paint their faces and redden their lips because their health is poor and their flesh pale?" asked Lorn, smiling in complete confidence in her own natural charms.

"It is the custom so to do," I answered.

"What a strange custom," put in Bryn. "A man then never knows whether a maid is beautiful and healthy until he washes her face! The men must despise them!"

"On the contrary," I defended, "every man, that way, has a beautiful maid, or as nearly so as art can make her."

Bryn sniffed in disbelief, and the Queen laughed openly.

"Hrothgar, would you like to put some red paint on your cheeks and some rouge upon your lips, and look like a girl of the future?"

Hrothgar only snorted, jingling his spurs as he urged his horse nearer. "I have been listening to our stranger, and it seems that men have come upon a degenerate time in that one he speaks

of."

"Aye, that it does! They do not hunt, for there is no game. They do not ride horses, for there are too few and there is no need. Instead, they go about in closed carriages drawn by something he calls engines! What is an engine, Hrothgar?"

"It is a device to throw stones over a city's walls."

"How could an engine draw a carriage, then?" asked Bryn.

I pondered. Everything familiar to me was so far away, there was no way to tell them what a gasoline engine was like. So I answered, "One day, when there is time, I will build you such an engine if I can find the materials."

With such talk, the time passed quickly, and darkness was nearly upon us when we began to ascend the long spiral of narrow roadway. On the great flat top of a sheer tower of rock, the fortress home called Arnberg had been erected by one of Queen Lorn's mighty ancestors.

Across the moat we cantered, and behind our company the great drawbridge groaned and creaked erect, and the portcullis clattered down. It was strange to me to see these familiar devices of medievalism used here in this ancient, forgotten time. How little do we really know of the past!

If the ride had been magic and beauty to me, here I entered upon a scene and an experience eclipsing every other experience of my life. Strange lights like marsh fires glimmered softly in the wall flambeaux, and I was too embarrassed by my ignorance to ask how such soft and beautiful light might be made. The hangings shimmered full of subtle colors and delightful figure work, some of it too frank for modern eyes. A dozen maids, bare breasted and soft footed, came and made obeisance before Lorn. She bade them make us

comfortable and refresh us after our long ride, and then prepare a meal.

A half hour later, I descended from the chamber where I had bathed and put on clean, curiously rich clothes, much embarrassed by the frankly curious, over-personal ministrations of one of the handmaids.

I found Lorn and several warriors in quiet conversation upon a broad balcony overlooking the whole valley. Far, far to the south, the lights of the great City of the Ring spread, a half-day's hard ride away.

I had an intense curiosity about these people. I wanted to know everything about them. So many seemingly familiar things about them proved unfamiliar upon a closer look, that I could not form a clear picture of their life. This castle, for instance, had a medieval appearance from the exterior. But upon entering, the sybaritic splendor, the soft luxury and almost decadent art of the furnishings, the carvings and hangings, the utter infinitude of the past of this race expressed in every appointment, were to my mind insurmountable obstacles to understanding them.

Were these the supposedly hardy and primitive progenitors of the Norse? They were the Norse race in appearance, in weapons, in hardy bearing; yet about them was none of the harsh, battle-hardened and war-conscious mettle supposedly the heritage of the Norse. A war-like people, yes; but also a cultured people, possessing a knowledge of certain things I could not associate with the ancient Norse.

For instance, as we stood there upon the balcony—a dozen men in silk and soft fabrics, weapons and armor left in the chambers to which the maids had shown us—Bryn came out to us through the deepening night. Her hair made a golden aura around her head, floating,

soft, indescribably feminine. And as if her arrival was a signal, Lorn made a motion with her hands, and . . .

Instead of the valley, the far City of the Ring, and the mighty dark ranks of the great trees, there extended beyond us only the seething mounting waves of the sea. Waves a mile in height dashed across the valley, beat against the rocks of the tower of stone. As far as one could see, there was only a tormented, hastening force of water, rising, heaving, boiling, falling—foam and wave and whirlpool and debris. I gave a cry of wonder, for I knew it was an illusion. Bryn said softly, "Yes, Lorn, that is a true sending you have made."

"Of course, Bryn. Think you I would turn against my husband and my King if I did not know that picture was true. If it were false, the image would shiver and break, the truth would show through all the fabric of falsehood. I know."

"We all know, Lorn of Heorot."

Hrothgar spoke, his voice awed at the terrible scene. It is only that we cannot bring his people to make a break with the King. They fear him, but they must realize that, like the flood and war to come, he too must be faced and overcome if we are to live.

"He was brought up to disbelieve in all the ancient science. His parents are at fault. His mother was ignorant of the deeper arts."

I felt a little ignorant myself, and kept quiet, for I could not find a "modern scientific explanation" for the vision that filled the valley. Lorn dropped her hand and the vision swept away. Then she turned to me.

"Stranger with the name of our Mother Fjorgyn, we believe you come from a time beyond this scene I have shown you. We are going to cast more such phantasms-of-the-future into life before this balcony, and you must speak

and tell us if they be true or not. Do you understand? We will know if they be true pictures or false, and that way we will know whether you speak with golden truth or with false thought in your mind. Watch . . ."

She waved her hand again, and before the balcony the scene changed, the valley became the bed of a river, and on the river were the skin tents of Indians, the bark canoes. The forest seemed much reduced in tree size. I wondered if that were due to deposits of poisons in the soil—perhaps chemicals drawn from the surface of the moon and widely dispersed over earth's surface.

Lorn's voice cut in sharply, "Speak, stranger. Is this a true picture of the future?"

I knew I was really on trial here, not being taken on trust as before. I answered, "It is true of a certain period of the future, before the coming of my race to the shores of this continent."

Lorn waved a hand, and the picture was gone. "Where are your engine-drawn carriages, your flying cabins, your smoking locomotives?"

"They are not yet invented. Those were Indians, and I do not know for how long a time they lived thus before the coming of my people."

Lorn nodded to Bryn, and Bryn cast her hand in similar gesture, her lips moving with a weird effort. She, too, was a master of this eerie art of the chimera. How was it done? Only their "Fjorgyn", or some other creature of

their pagan Pantheology, could have said. To me it was mystery, but it was vitally real.

Before Bryn's art, the picture making of Lorn paled. They were as different, those chimerical visions, as the work of two painters, one Russian and one French surrealist.

The valley became again the bed of a river, the trees were gone, farmhouses dotted the scene. I leaned forward, for the picture was of a time near my own. In the distance, the skyscrapers of some great modern city reared, square and lofty and pragmatic. Across the sky droned a flight of warplanes. Far, far overhead, I saw a vast construction, a flying wing, speeding, speeding. From it dropped an almost invisible pellet, down, down, suddenly blossoming into a titanic flower of evil force. Like a wink, the tall towers disappeared, the waves of smoke and force spread successively outward, and beneath the weight of that hand of death all semblance of the work of man was obliterated. Time flowed like water, and in an instant the smoke had cleared, and the whole valley lay desolate and dead.

"Was that a true picture, my friend from the future?" Bryn's voice was clear and sorrowful, filled with pain for the sudden horrible death of all that city of people.

"Yes, Bryn," I murmured sadly. I could not help realizing that it was a true picture of my own time, for I knew that within short years the bombs of atomic force would strike American cities in just that irresistible way.

"That is the way of war in your time? Lorn's voice was filled with horror, and something else I could not fathom. She was to me enigmatic, very human, yet about her was a hidden well of emotion.

"That is the way it will be soon. For my people, there is the fear of that

FOOTNOTE—Norse Galdrakinns, of the Sealds: Sir Walter Scott says: In the Northern idea of the witch, the possession of magical knowledge was an especial attribute from Odin . . .

Their matrons possessed a high reputation for magic, for prophetic powers, for creating illusions. It was not unusual for these females, from respect to their supposed views into futurity, to arise to the degree of Haza, or chief priestess (from which comes the word Hexe).

They were . . . professionally implicated in all . . . mystic and secret rites . . . used to conciliate the favor of the infernal powers . . . dark and wayward, as their realms were gloomy and dismal.

Lucian and Apuleius, and such poets and authors, ascribe all these powers to the witches of the heathens of the pagan world . . .

. . . the spectres of the dead, by name and order summoned, appeared, muttering regrets . . .

bomb, just as for yours there is the fear of this falling moon. It is a question which one will do the most damage, O Lorn of the hidden soul."

"Does he tell truth, Bryn?" asked Lorn.

"I know he tells truth. I saw him arrive, I called him here. For weeks I prayed for something, some help from the Earth Mother to convince the King and the nobles that the migration must take place now before it is too late. She sent me this man. Why should you doubt, Lorn, who know yourself so much of these things that commoner men do not understand?"

"I do not doubt. I am trying to convince our warrior leaders of the need for instant action."

"Forgive me, my Queen. I did not understand why you held trial upon him in this way, for I knew you must realize the truth."

"I have been trying him for these who may doubt. No man is truly believed innocent until duly tried and acquitted, you know. There was much room for doubt in their practical minds of such marvels as we accept without question."

The company went in then from the wide balcony to the great chamber within, and sat to meat. Sober was the talk, and sober the faces. For all knew that we were entering upon a struggle for life against the ignorance personified by the King, and the King had the power. But after the meal, dozens of messengers were sent out in all directions; and I had no doubt the Heorot version of "the clans" were being called to the gathering.

I overheard Lorn directing one warrior to approach a certain leader in the army who had been so bold as to declare his love for her. "Once I despised that man. Now I need him, and we all need him. It seems despicable to so use

his affection for me, but under the circumstances . . . He will come to Arnberg when you show him this ring and he will bring a quarter of the army with him when you explain our need."

Days passed swiftly, and the gathering on the plain beneath the Arnberg tower of rock grew into a multitude. There was no sign of action from the King of the City of the Ring. Hrothgar mentioned this to me.

"He awaits our departure. When we are strung out and burdened with our gear and supplies, he will strike. And bitter will that battle be, for he is a hard-headed brutal warrior, and he sees no sense in fleeing from the moon. Moon-madness, he calls it. Once I would have agreed with him. But not now . . ."

And Hrothgar pointed to the rushing vastness overhead, again swinging across the sky with a now audible rushing sound. As the mighty sight passed on, overhead could be heard the sound of explosions, and after a time bits of rock rained down about the Arnberg. Still overhead trailed the white fiery tail of the vast cometlike flight of the moon, and I knew that the gravitational force of the earth was ripping the deep icy surface of the moon with its heavy fingers, tearing off chunks of ice and rock, bringing them down into the air and burning them with the heat of their speed so that they exploded.

A week had passed, busy weeks of preparation. Wagons were loaded with gear, and were lined up along the road to the north waiting for the hour of departure.

The morning of the day broke at last. Pitiful was the face of Lorn as she watched the great gates of her palace swung to and the great iron locks set in place.

"Goodbye, ancestral home. Whether I do well or ill in leaving you only time can say. To me it seems right, and may

the spirits that dwell about you forgive me for this day."

CHAPTER IV

MUCH counsel had been taken on the lie of the land northward, and the proper paths to follow to gain altitude. Thus it was that the caravans of our migration followed the mountainous paths, along the backbone of the continent. The City of the Ring lay on one side of the southern end of this range of mountains, and on the other side beat the rising ring-tides of the sea, raised ever-higher by the madly circling moon. The moon's speed was increased in its orbit because of the fall; the shrinking orbit became more and more rapid as the spiral of the fall tightened. We passed above the City of the Ring, Heorot, in great strength and in close order. I do not know what the numbers of the multitude were.

Far below, on the side of the mountain's spur upon which Heorot rested as the Crown, the people thronged out to watch the passing. The head of our procession was a thousand horse under Lorn. Then came the lighter wagons and the riding mounts of the women. The center was a force of foot soldiers some five thousand in number. Then came the baggage wagons of the army, the innumerable wagons of the farmers who constantly joined us and, last, separated from the front by a two hours' ride at least, came the rear guard, two thousand horse under Hrothgar.

To me it looked like an invitation to the King to fall upon us to pass so near to the city, but in truth our passage was safe, for the road was far up on the mountain-side above the city, and could have been easily defended.

Hrothgar explained: "He will not touch us here. He will await us in a spot of his own choosing far ahead, where

the people of the city cannot see his work. He will fall upon us in the night, perhaps, or strike at the baggage wains, seeking to confuse our order and overwhelm us. He is crafty, he would not risk an outright defeat, and while he could avoid it with his full strength, he does not want to bring his whole force into this. They might turn upon him if they were asked to war upon their Queen."

But Hrothgar was wrong. As the winding procession's fore passed beyond the city, down from the mountain-side, now above us as the road descended again rode a party. Burnished and bright their armor, gleaming their weapons; a score of nobles of the city led by King Halvar. Up to an arrow-flight distance they rode and paused right across the road, barring the way. Lorn reined her horse. Beside her, Bryn looked askance at the King and I knew that the crisis she expected was coming.

"Give me my Queen, Hrothgar," bel-
lowed Halvar to the big warrior on my right.

Hrothgar made no answer, only pulled his horse forward so that his body and his mount shielded the Queen from the King's party. The Queen called across the slowly narrowing space, narrowing because the tide of the masses behind us had not stopped but kept pushing steadily forward. "You have no Queen, Halvar Hard-head; and your people, too are deserting you. Stay here and drown with the rest of the blind men who follow you."

Steadily, the force of the mass behind us pushed on. Whether they could not stop, or whether a long restrained anger against the proud King now pushed them forward, I could not know. The way was downward here and the baggage wains were heavy. Closer we came

and closer.

"One side, King who will not lead us." Hrothgar's voice was laced with scorn. "You can see we are not stopping. So step aside, before blood is shed."

"Blood will be shed before you put this shame upon me," the King shouted, and whirled up a two-handed sword, set his horse thundering up toward Hrothgar, who was still in front of Lorn's mount. Hrothgar almost leisurely loosed an axe from his belt, whirled it once to test the heft of it, set his shield before him and braced his feet in the stirrups to meet the charge. The two great mounts met with a shock that set them back on their haunches. The great sword crashed down clanging upon the bosses of the shield. Hrothgar's axe whirled and bounded off the King's helmet. One of the proud Eaglewings on the helmet was shorn clean from the helm, fell to the earth. The horses circled, the weapons gleamed in little arcs as they set themselves to strike again. The King's party charged suddenly, sweeping down upon us. Suddenly, there was a spear coming at my breast—the rider leaning over his horse's neck, and peering at me from the side of a round shield. They had hung the chain mail and the shield upon me that morning, but they had not gifted me with the skill to use the weapon they had girded at my waist. I got my hand into the heavy leather loop of the shield and swung it forward to stop that spear. As the horseman passed me, I reached for his sword belt and pulled him to me. His horse rushed past. I had him dangling by one hand. I dropped him, while the horse I was riding exhibited real training in the art of war. He stepped upon my opponent, turned around, all four feet milling, and trumpeted a shrill horse scream of anger.

I looked down, a little sick at the

mess my horse's feet had made of that now dead carcass.

Hrothgar and the King were still at it, Halvar trying to get to the Queen, Hrothgar driving him away with short axe-strokes. I heard Bryn scream, then saw her dappled horse, the saddle empty. I saw her scarf trailing backward as a rider bore her away down the highway. As at a signal, the score of warriors with the King wheeled and dashed away. The King drew back from Hrothgar's reach, wheeled his mount and galloped after. I reasoned that in the confusion one of the helmeted warriors had mistaken Bryn for the Queen, seized her and given the prearranged signal for flight. Or had it been Bryn they had really been after? I looked at Lorn. There was an enigmatic, almost triumphant expression in her eyes. For an instant, I had a wild surmise that she had arranged this with Halvar, to give him Bryn and so to stop the migration. But I knew better. Still, the whole thing had mysterious indirection about it. The King and his party come demanding Lorn, go berserk at refusal, and ride off with Bryn, the Haxa prophetess. The day had darkened, for me, beyond any sun's power to brighten. This woman's ways had bewitched me far more than any of her mysterious powers.

I moved my mount closer to Hrothgar and Lorn. Here were all the leaders left to the movement; the spirit had been removed with Bryn's seizure.

Hrothgar was speaking to Lorn, a thoughtful expression on his unperturbed face. To him, I saw, the thing was not an emotional blow, but rather like a move in chess that he was pondering.

"... Has seized her to take the heart out of our fighting. Now will come the great blow, the master stroke. He feels that seizing Bryn will con-

vince our warriors that their luck has deserted them; that the favor of the Gods has passed to him who holds the Haxa, the God's favorite."

"You think he did not intend to seize me at all?" asked Lorn.

"Nay, if he had meant to seize you, he would have demanded Bryn and ignored you. His attack for you was but a feint to draw attention from the Haxa maid."

So the King's furious demands were in the nature of a psychological attack upon morale? I wondered at the cunning displayed, and I admired Hrothgar's sense in seeing that this was the cause.

On went the flow of the migration. But for me, all the joy of the beauty and the wild picturesque magnificence of this primeval world were gone. Before me was only the echo of Bryn's laughter, the faint vision of her smile, and her blue, deep-set eyes questioning me, probing me. She was a woman not forgotten easily. But what could I do? I rode on beside the Queen. Her eyes swept my face occasionally, musing in her secret way upon my thoughts. For all I knew, she could read them as I could a printed page.

In spite of me, the male force in me responded to her veiled glances, so that my horse came nearer to hers, my blood pounded familiarly in my ears, and I found pleasure in her voice. For I admired Lorn, and found in her everything a woman should be. Although, too, there was a certain dread about her, a hidden power that sometimes showed its strong claws in strange ways. But Bryn was gone, and I could see nothing to be done about it, other than turning and setting siege to that doomed city behind us. I turned in my saddle and looked back at the heavy, high walls and squat towers of Heorot. Sadly, I put the bright beauty of Bryn out of my

mind, and rode on beside the Queen.

To Hrothgar, the light had gone out of life, too. "Is there no way to win her back?" I asked him.

"We have not sufficient strength to attack the city. If we pursue his horse now, our forces will be divided. It would be playing into his hands. That may have been the reasoning behind the abduction. It was a bold thing to do, typical of Halvar. But there is a sound tactic behind it, never fear. His forces are hidden along here somewhere, and would fall upon us if we split into searching parties. We can do nothing but ride and forget her. At least now. Later, we may take thought upon it."

"If the King attacks in force, will he not overwhelm us?"

"He would, if he could trust his forces. But near half his men are from the lands who owe allegiance only to Lorn. He cannot afford to attack her, since half his men would then turn upon him. He must be busy dividing and sorting out the men loyal to him from those who hold allegiance to Lorn."

"He will send them away to another part of the country, then lead his loyal men in an attack upon us?"

"He may, and he may find that impossible. We trusted in these difficulties tying his hands until we were out of his reach. But by the looks of the passage ahead, his hands are not tied."

CHAPTER V

I LOOKED across the madly racing water where Hrothgar pointed, and a dread struck me. Ahead of us lay a pass, where the road dipped into the water pushing through from the sea. A pass which I knew could only be filled at the high tides that dashed up madly every four hours under the circling moon. It was a distinct revelation

to me that the moon could pull such tides, that its orbit around the earth would be so speeded up by its fall as to make it complete a circle in four hours, even though I knew from the little astronomy I had studied that such an effect could be expected if the moon should be attracted too closely to the earth.

Evidently, some years ago this highway had passed across the depression quite clear of water, but now the tides swept over it with great waves shaking manes of foam, and our whole procession had to stop and wait till the tides fell.

But it was not the mad waves pouring through the gap in the mountain barrier that had so far kept the mighty tides from sweeping over all the land of the City of the Ring. It was not the terrible sight of the moon above pulling that furious tide water through the gap and out onto the land below. But on the other side of that rushing weight of water waited an army, drawn up to crush us as we rode up from the path of the water.

I looked at Lorn to see how she was taking the sight of the barriers of water and battle ahead, and surprised a secret little smile of triumph upon her face. I was taken aback, as there was nothing to smile about unless she was secretly hoping for the failure of the migration. But as I watched her, I saw her eyes were upon the face of one of the three leaders who sat their mounts a few paces ahead of the long inner face of the crescent of steel. He was returning her glance and her smile, and I remembered her cryptic words in the Castle of Arnberg, when she had sent our certain messengers, saying, "all of the King's men are not really the King's men."

It was lucky for us that we struck that barrier of water at its height, for

it gave us time to bring up all our forces from the rear, and to prepare a striking force to fling at the circle barring the way. Else we would have been in sad straits, with our warriors scattered along twenty miles of highway.

As the waters receded and the broad road ahead lay at last clear, Hrothgar brought forward the full strength of our horses, sending them out ahead like a man's two outstretched arms, wide weapons to guard the sides. The center was our strength—five thousand fully armed foot soldiers marching steadily forward, narrowing the gap between themselves and that waiting crescent of steel.

A thousand horses spreading wide on each side, reaching out like great pin-cers toward the enemy, the long spears of the foot in the center lowered and ready to receive a charge. Hrothgar himself held a thousand horses back and to one side of the highway. I waited beside him with Lorn, who had thrown off her cloak and was revealed clad in fine steel mail and with a good sized sword at her belt. Her high breasts were protected by breast plates, her head with a crested helmet, the crest a rearing horse with spreading wings. Her eyes had lost their sleepy sultriness, flashed with an anger and excitement strange upon her face. I saw that she was really filled with a boiling indignation at the stand her mate, the King, had taken.

The center figure of the three leaders of the enemy raised one hand, and I knew that when the hand was dropped, some or all of those eagerly waiting forces would charge down the slope upon us. A fierce wave of war thrill ran through the whole host. Unrestrainable shrill cries and the heavier shouts of male lungs no longer able to hold the bated breath broke on the air.

Just as that upraised arm seemed

about to fall, a weird thing happened. . . . Through the gap in the mountain's wall which allowed the entry of the sea waves; through that boiling, surging, receding water, now fled to a thousand yards distance across the mountain slope from the highway's still-wet shoulders; through the mighty opening, like an apparition, sailed a great Dragon ship. The oars flung water forward madly to check the speed, the wide bellying sail was pulled rapidly aloft, and scrambling sailors swarmed over the yard to lash it in place. But the speed was too great, the great ship swam on and on toward the water's receding edge, swung broadside as the tiller went over, still came on to set herself hard aground on that narrowing bit of earth that lay open between the two armies.

Then, I saw that the maneuver had been purposeful and planned, for from the broad side of the ship a gangplank was swiftly let down to the wet soil, and down the gangplank toward us came a series of figures startling to me.

Startling, because of the familiar nature of their fantastic dress. Indian feather cloaks shimmered on their backs. The sun-rayed head-dresses of gold, the glittering turquoise mosaic of the shields, the black volcanic glass of their axe-heads, everything about them told me that here were Indians from the great forgotten civilization of the Pre-Inca.

This ship came from a city of the Incas, and I remembered from my reading that some of those cities high on the Andes, such as Tiahuanaco, had been built when the sea made beaches along the very tops of the Andes range. Only the increasing girdle tide of a descending moon could have brought the sea to their doors and made of them a seafaring race. And here they were, as they had been then, faring forth upon

a sea gone mad with the pull of the nearing satellite, just as they had been when that mighty city of Tiahuanaco had been built.

Lorn watched the procession approach with an unbelieving expression. "The legend of the Magi's coming from the great lands of the unknown southern seas," she murmured, half to herself. "A pretty time for him to show up."

"Time enough, if you ask me," Hrothgar returned. "The battle seems postponed until we learn just what the ship means to us."

"If they should happen to convince the King that the moon is going to descend all the way and set itself down on his palace in Heorot, it might mean that there would be no battle." Lorn's eyes sparkled. "Let us get to them first. Perhaps we can translate for them."

"You can't speak Pre-Incan," I said in astonishment.

"You know so much, outlander. Why can't I speak the language of these strangers?"

"You just said the seas that sourced that ship were unknown."

Lorn laughed. "You will translate their words. And mind you, translate in such a way that it seems that they foretell exactly those things that Bryn foretold. Thus the corroboration will bear out Bryn, and save our people much bloodshed if the King should be convinced. Get out there, now, and mind you translate every word they utter."

The cunning of these people was continually astonishing to me. Lorn had instantly conceived a use for the sudden appearance of the stranger ship. She was going to use whatever strange message they bore to ward off the coming struggle, by fooling Halvar into thinking they were wise men come to

warn of the coming destruction.

I kicked my heels against the mount's flanks, rode forward gingerly clinging to the mettled horse's mane, for I had yet to master the art of being at home on a horse's back.

A few paces from the dignified procession, I held up my hand, palm outward, and struggled to think of some word that might be recognizable to these Pre-Incans. Knowing that was impossible, I rattled off a few English words. "Welcome, strangers, to this land."

I got down off the horse, half falling as I did so, and a ripple of laughter ran through the curiously watching armies. I bowed formally to the great feathered head-dress, looking for the marks of the leader that I might be polite to the right one.

But that meeting and that trick of Lorn's cunning invention never were to take place. The leader of the Army from the City of the Ring recovered from his surprise and wonder at a ship able to stay afloat on the tremendous waves that rode the seas. He dropped his arm, and the slow thunder of the great charger's hoofs rose louder and louder as the attack began.

I don't know how many there were of them, there was a force of hundreds of heavily armed foot soldiers behind the cavalry. In numbers, they were perhaps but two-thirds our own. But they were unencumbered by baggage and women and children. We had to hold our front, had to pivot the fight around an immovable point, the defense of our families.

I think their cavalry was more numerous than our own, and their foot men heavier armed and better trained. But for me, the battle swiftly resolved itself into a desperate battle to stay alive while trained warriors surged around me on every side. For I was

out in front of our own forces, standing within a dozen feet of the weirdly caparisoned ambassador from the South. He stood there unafraid, the tall plumes of his head-dress nodding, quite prepared to enjoy the scene. But his court hurried him back up the gangplank, protesting, and I stood alone while Halvar's black and gold armored riders hurtled past me toward the advancing line of Hrothgar's warriors. Perhaps if I had remained still I would have been ignored as somewhat of a neutral newcomer. But I managed to board the horse, and pulled the sword from its scabbard, purely for defense.

Which was distinctly a mistake. The blade had no sooner gleamed in my hand than one of those furiously charging knights swerved, came at me with spear leveled for my breast. I got the heavy blade in the way of the spear, and its sharp edge sliced the haft and caught. The spear pulled from his grasp as he hurtled by. I turned in my saddle. He had wheeled his horse, rearing, and pulled his own sword. His mount was dancing toward me with small, quick steps. The heavy sword swung aloft and crashed toward my helmet. My inexperience saved me. I fell off the horse.

On my own two feet, I felt considerably more able. I grabbed hold of his foot, slipped the stirrup loose, pulled him down upon me. Seizing his sword hand by the wrist, I shook his arm till the blade fell free of his mailed grasp. Then I stood him up, crashed my own mailed hand into his chin strap.

I wanted no more of this horse business. It was too apt to prove fatal. So I slapped the two mounts on the flanks with the flat of my sword and drove them away from us. I stood over the fallen figure, waiting for whatever was to happen next. I felt exhilarated. But I was firmly resolved that if I lived

through this, I was taking daily lessons in the art of the broadsword.

The whole front of Halvar's advancing horse was engaged. So far as I could see, there was little tactical planning about it. It was man to man and may the best one win. Hrothgar's force still waited beside the great column of foot soldiers, while down the slope toward us marched the smaller force of the king's men. They carried bows. The arrows began to flit into the milling mass of furiously hacking horsemen.

Apparently, this was what Hrothgar waited for, for he yelled out an order, and swung into action with all the finesse of an avalanche. Around the melee they galloped, and headlong into the ranks of the King's men, shattering their column, scattering them right and left. They passed straight through the mass, then wheeled at a distance to strike again.

It was evident to anyone with half an eye that Hrothgar's followers were going to smash the King's forces. Already they were cut in two, and the two wings of Hrothgar's line were closing in on the smaller part in an encircling movement. The other and greater part was engaged by the advancing column of soldiers, vastly outnumbered, and in difficulty.

The King must have seen this clearly, for he appeared from the woods where he had either been skulking or hiding Bryn. He rode forward between the armies with his hands upraised and empty. The battling warriors lowered their swords, and his bellowing voice rode over the plumed helmets, the fierce upturned faces.

"Warriors, men of Heorot, cease this struggle. Anger has led us astray. Counseling words shall put us back on the path of peace . . ."

Whether he was contemplating some new trick, or whether he was honestly

deploring the bloodshed, we did not know. At any rate, the officers rode out behind their King, and Hrothgar and his own officers came from position and gathered in a rough circle about the King. No one sheathed a sword, all were wary, but it was evident to me that only talk would take place that day.

I gave a quick look at the high prowed ship, now careened on the dry ground behind me, but only the shafts of thonged arrows and the tips of drawn bows, the grim faces of the dark-skinned warriors in feather head-dress, showed along the rail. I walked toward the ring of riders that was forming around the council of Lorn, Hrothgar, King Halvar and his officers. I wanted to know just what he proposed to say to explain his attack upon his own people.

" . . . It is needless to travel all that distance to the safety of the far northern highlands. Look at these maps, at the low lands that lie on that northern rim of Heorot. The sea will dash across and wipe out the people of the Geats. Look rather upon this ship that has come to us as an omen. It rides these giant waves with unconcern, light as a swallow. Rather should we build many ships, a fleet of great ships to carry us to safety if the sea overwhelms the land."

The King seemed sincere in his council; perhaps he did think the ships would serve the purpose.

Lorn's voice rose. "There is no time, Halvar. Two years ago, the sailors of the coast came from their wrecked harbors and asked for help to build ships for all of our people, and you laughed at them as you laughed at Bryn and her man from the time far after Ragnarock. Our safety lies in flight, and in following the man who was sent us by our living deity, the Fjorgyn herself."

I pushed forward with my hand

raised, reaching for the maps in the King's hand. I had yet to see what the country looked like on a map. The King let me have them reluctantly, and I studied them while the voices wrangled about me.

That archaic land mass was far different from anything I expected. I could not even tell if I had landed after my time journey upon North America, Asia or Europe. It may have been North America, but if so, the land was joined to Europe and to Asia by vast areas of dryland, and the mountains were very different. The change in the unrecognizable mountains warned me that terrific earthquakes and submergences of whole portions of continents, the raising up of new mountain chains, were to be expected. I picked out what looked like the highest range of all, put my finger on the spot closest to Heorot, and raised my voice above the others.

"To stay here is death for all. The plan to build ships is good, but first we must journey to the highest land we can reach, and there build ships far bigger and far stouter than this stranger ship that has remained afloat only by some miracle. I think they have put in here only to keep from capsizing in the great waves at sea. This land will be covered in a week's time."

I had made calculations on the daily increase in the height of the tides, and had figured that in about a week the peak of the girdle tides would sweep across Heorot fifty feet deep.

Lorn's voice, lovely in her attempt to save her people by smoothing the angry and troubled spirits around her, rose high and clear as a bell: "O King, my husband, be not the man to cause the death of your people. Listen to the counsel of our wise men. Our Haxas know the ways of tides and seas and the moon. They have studied, they know when Mimir will fall in death

upon us to the very hour and minute. Be wise and listen to wisdom. We must do as these Haxas and the stranger from another time tell us. You cannot fight a mad ocean with a sword. You cannot dominate the tides with your will or your bellowing voice. Only reason and united effort can save any of us."

Perhaps in that moment reason returned to the King, I don't know. But he bowed his head and nodded sadly. "So be it—northward and northward we travel, and may the Gods watch over us in this fearful time."

CHAPTER VI

THAT abandoning of the city Heorot was a sad thing. Mournfully, the remaining citizens closed their doors, shuttered their windows for the last time, climbed aboard the big wagons, clucked to the horses.

From the palace, from the big mansions on the hill, poured the court beauties and the dandies in their glittering corselets, on chariots with golden plated wheels. Whatever this journey was going to be, it began colorfully enough to suit anyone. As we approached the pass of the water again, the strange ship of the southlands loomed again in sight, and Lorn, Hrothgar, Halvar and several of the nobles rode up to the still watchful strangers and hailed them. But they had seen enough of our manners and would not lower their gang plank. They looked down at us grimly over their arrows, the bowstrings straining in their hands. Evidently, it would be the part of wisdom to let these bearded strangers alone.

Day followed day, each one punctuated by that mad moon which ap-

FOOTNOTE—Tiahuanaco on Lake Titicaca, and certain other cities of the high Andes are said by researchers to be Pre-deluge, the girdle tide of the moon descent having left a shoreline right up to the edge of Tiahuanacac, which was evidently a sea-port. Now high up in the Andes, once it was on the border of the sea—BECAUSE THE SEA WAS DRAWN TO THAT HEIGHT NEAR THE EQUATOR, BY THE DESCENT OF THE MOON.

peared overhead at quarterly intervals. The long tail of the debris torn from its surface by the earth's attraction streamed out after the moon for thousands of miles, made a pathway of ice-dust and rock debris which was continuous, and which the moon traversed as a car does a road.

Quakes were regular. Each time the moon passed overhead, the earth itself heaved underfoot. The thunderous reports of earth cracks were constant. One of our greatest fears was being engulfed by the earth itself if it should happen to open beneath us.

We followed the backbone of the continent. We followed tracks that only goats could have made. The last few days, the air grew so thin that many collapsed. Our heads were dizzy with the altitude, but I knew that a few weeks of these heights would accustom the people to them.

At last we reached the highest visible peak of the range. On ahead lay an impassable jumble of peaks and canyons, ice-clothed and bare of life. We climbed up the side of this mountain to where a great rocky shelf lay nearly flat, and the dwarfish trees bent stunted, twisted limbs southward in the wind. Here, I said, playing out my role of prophet sent by the Earth Mother, was the place to build shelters and ships. Shelters if the waters did not rise so high, ships if they did.

How many of us were there? I do not know. Many, many thousands. There was no counting. Some died of the privations and the cold; others labored, and thrived on the labor. A road was built down the side of the great mountain, down to the mighty forests below. There, timbers were cut and planed, dragged up the long trail. Plans for the ships were drawn, with lengthy arguments among the sea-faring men. I told the story of the ark from

the Bible, of how it was built, big and decked and roofed over to keep the water out no matter how big the waves. Of the Peruvian myth of the five eggs found on a mountainside after the waters had subsided, of the great number of other myths describing the ships that had survived as "eggs". I said that this indicated that those ships which survived were built so as to be almost submersible; able to survive no matter how many waves washed over it. No ordinary ship could survive; only a ship specially designed. I helped them draw plans for such a ship, bulky beams bracing the sides, the heavy double beams of the keel reinforced in every way possible. I drew plans of pumps to force out the water if the seams parted, which they would. I helped as much as I could, and the work began. Such a ship had to be big, to carry supplies for at least a year.

The days passed, and the immense labor of building the arks went forward among the most terrible manifestations in the heavens. From the moon, speeding overhead, two great polar tail streams left its surface, blocks of ice and clouds of ice-dust spiralled steeply down and shot tangentially into the atmosphere. Terrible hail, rain, and an hourly hurricane swept from the skies upon us. Our shelters were crude, and we suffered from the alternate wetting, freezing and penetrating wind. But our troubles were only beginning.

The whole surface of the earth heaved continually under the lunar pull; landslides down the mountainside wiped out our roadway; it had to be rebuilt again and again. Rains of mud fell upon us. This, I surmised, was the bottom of the ancient seas of the moon, pulled loose now that the ice sheathing had been stripped from its surface. The moon itself was grown so vast it seemed to fill half the sky as it sped overhead,

its surface was marked with vast crevices and pockmarks, clouds of ice-dust filled the upper atmosphere so that the sky was never fully visible. I timed the moon as well as I could, and its time was around three hours to get around the earth. The day itself had shortened to something like 18 hours, so near as I could tell. The moon was pulling the earth itself around faster. If I had not still had my watch in my future business suit, I would have had no idea how long these periods were. This watch itself helped to substantiate my position as a prophet and a man of magic, for they had nothing like it. They had waterclocks, and they considered them unreliable because the day did not correspond to the time of the clock a few years ago. I explained all this as well as I could.

Labor filled our days, short as they were, and our nights were filled with sleep and waking fears for the constant earth tremors and showers of hail and great jagged blocks of ice, of hot and smoking rough rocks pouring down from the skies. Blasts of hot air swept across the plains out of the sky, followed by freezing winds. The earth, as far as our eyes could reach, was becoming covered solid with ice. An ice age was upon us. That this ice was going to be covered with the relaxing girdle tides when the moon at last took its final plunge, I knew. That it was going to float in great bergs, churning and grinding and crushing in the gigantic tidal waves, I knew too. But I could not figure how any ship, no matter how sturdy, could live through the crash that was coming. Night was filled with the long streaks of shooting stars as particles of the moon's rock struck the atmosphere and became glowing hot.

In the midst of this almost constant heavenly display of fireworks, of great fogs and almost hourly quakes, the

work went steadily forward.

Bryn and Lorn maintained a steady kind of friendly rivalry for my company. Halvar, the King, began to show signs of jealousy over the quite open affection Lorn displayed for me. Hrothgar, evidently long a suitor for the forbidden love of Bryn, likewise showed signs of anger whenever Bryn evinced interest in me.

But the little human tableau of character and love clash was played out against a background of Titanic change and cataclysmic and constant torture of the face of nature, and such interests were eclipsed into the palest of minor notes.

The great plateau we had selected for our stand against the threat of annihilation was assaulted by all the fury of the elements. Landslides toppled down and stacked all across the mountainside of the plateau, and the other steep cliff of the plateau was daily threatened by complete immersion in the madly rising and falling sea. For hours, the vast valleys below would remain dry and gently streaming off the remains of the recent torrents, then some simultaneous meeting of the mad globe circling moon-tides would combine to produce vast mountain-high waves to dash up the valleys, collide, spread out and pound our own mountainous stronghold with earth-shaking blows.

Sometimes these unpredictable coal-escences of many divergent tidal flows would bear upon their crest collections of shattered trees, of wrecked ships, the bodies of men and women and wooden buildings, all the multitudinous flotsam of the wreckage of a world rushing all together, towering high in great leaping spouts and whirling in vortices, borne beneath the water only to reappear far away, and all thrown against our cliff and ground there as in impotent fury at our unreachable position.

Daily, these watery collections of the death of nations grew greater in heterogeneity, and daily the waves mounted higher and higher, and our confidence in being able to build a ship that could live in the constant mad maelstrom that was once but the quiet waters of seas grew less.

Sometimes, these water-borne multitudes of corpses contained living people, still clinging to life and some frail bits of timber to which they were lashed. To our numbers these were added, when we could rescue them from the hungry subsiding waves. Sometimes, they were left high and dry as the floods subsided again, and we rode out with our horses and brought them into our camp. Strange indeed were some of these people, born on the ships to which they had fled when the waters rose over their cities and farms from the four quarters of the globe, only at last to feel their ships ground to matchwood under their feet by the mighty masses of moving water.

Nightly, our multitudes huddled in the improvised shelters and watched the moon glide overhead, impossibly near and terrible, half shrouded in icedust mists, trailed by a vast serpent of celestial debris, rocks and ice fragments, and after it passed the great showers of shooting stars and blazing meteorites were almost continuous until it appeared again. Three times a night the terrible apparition swept overhead, and the voices murmured in that imagery that was their habit, "Mimir has gone mad, and destroys himself."

Answering voices would say, "His anger must be so great he forgets that he destroys his people too."

Or "The Gods are dead and gone, and now the last of their sky homes crashes."

To build hastily an unsinkable ship from wood was our task, and I did my

best to give them all my knowledge of engineering and to show them how to build the staunchest ship that ever was built. Whether we would succeed, or would only be constructing our own coffins, I could not say, for there was no way to test. We had to be right the first time.

During these nightly vigils, when sleep was denied by the very quaking of the rocks deep beneath, by the howling tortured hot winds from the south, by the thunder of impossible torrents of rain on our makeshift roofs, Lorn would pick her way among the throng of weary men to my side. She would seat herself with all the composure and majesty with which she had seated herself on her throne. We would speak then of the future in which I had lived. Or she would take a harp and chant the lays of the people of the Geats, in which all their mighty history was portrayed in glowing and heroic verse. And the people would applaud her and love their Queen with extravagant phrases. Bryn would seat herself at my feet, and Lorn and Bryn would hold long arguments on the nature of the Haxa magic, and the many forbidden ways of those who served the Haxa priesthood. Then, the hooded and robed Haxa would arise and shield their ears with their hands, and go out into the stormy night to avoid listening to the blasphemy. Lorn would laugh, but Bryn would look worried and distraught, for she knew they had power for harm. And Halvar would glower at me for monopolizing the time of his Queen.

And Lorn would say, "You never seemed to care to occupy yourself with me in Heorot. Why should I become so valuable to you now?"

He would turn away, muttering, and we all knew that it was not that he loved Lorn, but only that he felt shamed because she preferred my company.

Hrogarth, whenever Bryn showed herself amiable or instructive to me, would also glower and mutter in his great red beard, and Bryn would smile up at him and say, "Does the foreigner shame your uncouth ways? Do not fear, Halvar my heart belongs to no man, nor yourself either."

I knew that if our enforced proximity continued, one or the other of these men would find a way to be the death of me, for to save my life I could deny these two heroic, talented and beautiful women nothing. My time and my wits were automatically and gladly at their slightest call. But that was true of all the men of the Geats, and many were the looks I got for having proved so interesting to these two that they spent little time with the other males.

Daily, Bryn cast her rune stones, and shook out her strongly colored scarves. She burnt little fires of incense, and prayed to Fjorgyn, the Earth Mother, to show us the way to safety. Daily, she cast the strange projections which were her greatest art, and to me the deepest of these people's mysteries. She was hoping that in one of her projections the time of the last, great drop of the moon upon the earth would be shown. For we did not know for sure whether we would get to finish the arks or be overwhelmed in the final great flood.

CHAPTER VII

CAME that day when our mountain shook like a jelly. Slides rumbled all day long, and we watched Mimir flame overhead with awe-struck fear in our breasts. We watched him, in the southern sky, rise and flame like an angry God, his face contorted in awful anger. We watched him rise and fail to climb the sky again. We saw the moon come near to the center of the far

southern horizon, and then we felt Hell break loose.

A shock such as no man can imagine or place into words. Earth itself trembling, the spinning that is the cause of day and night checked, so that the sun itself faltered in the sky and stood still. The clouds scurried together like frightened quail, and then whirled as the quail grew into a terrible dragon of black force, whirling fiery streamers. We watched as the night came and Mimir passed no more.

That night we expected nothing would ever be the same again. That darkness that had come after the first terrible shock of the moon striking earth's equator was swallowed up in rising mountainous seas.

The arks we had built began to shudder under our feet, for we had gathered within them from the torrents of rain. We knew that if the seas did not rise in this darkness to float our arks, they would never be floated.

We felt the shudder and rise and slam of our bottom against the earthen beds, we felt our ark float beneath us. Swiftly darkness swallowed our mountain and our last contact with land. Night wore on, and our ark bounded and rolled and turned wholly over again and again. As much under water as on top, we were flung about inside like chips in a child's rattle, and those of us who lived, lashed ourselves tightly to the stanchions and ringbolts. To every possible place were our bodies tightly tied to keep the roll and lift and smash of the ship from crushing us.

The terrible night wore on. When gray light came stealing through the few cracks still uncaulked, came pouring through those seams that were sprung by the wrenching force of the seas, we knew that earth would have a day and a night again.

Water had been forced into these

cracks into which light now poured, grey and miserly, but still the light of day again! That was the longest night of my life, for none of us knew or could believe that the sun would rise after that terrible obscuring of the sun and stopping of earth motion the evening before.

I would I could tell you of that voyage. The long exhausting work at the pumps to keep the ship light and able, the steady terrible tossing and turning of the untiring seas. The gradual depletion of the stores of food, the fear that rose steadily with the decreasing food supply, the days that wore into months. That fear, that all land everywhere was now and forever to be under water. Nowhere was there a sign of our companion arks. Nowhere was there sign of cessation of the awful lift and fall and smash of the seas.

From the south the first days there blew a hot wind, steady and frightening, burning to the body that exposed itself. The ship grew hot to the touch from this fiery blast. I realized that the air of the whole planet had been vastly heated by the force of the mighty fall of the moon. That vast body rushing through the air had heated all the air of earth by its friction.

I wish I could tell you, make you see our astonishment, when the clouds parted, after many weeks, and we saw Mimir once again. Most of us were sure that the moon had descended, fallen to earth and there remained, a vast mountain of crushed rock somewhere on the equator. But when the clouds parted and we saw Mimir overheard, reduced now to a third his former awe-inspiring size, I could not understand. Then, I remembered my demonstration—how two stones on strings can collide and bounce. And that the moon had not stuck fast on earth, but only received a new impetus from earth's whirling blow as it de-

scended. A new impetus which, added to its orbital speed, plus the added momentum of its fall, had caused it to rush on after striking earth glancingly. Rush on and on out into space again, I watched it night after night through a crack in the planking. I watched it recede and recede, wondering if it would take up an orbit similar to the moon with which I was familiar before the "fall," before my translation into this time.

All these phenomena of nature were of absorbing interest because our lives depended upon them. Upon the daily decreasing waves, upon the daily decreasing height of the tidal rise and fall, almost unobservable to us except that we could feel the change, the difference in direction. And at times know the tide had reached its terrific peak and was again descending, changing its direction of flow.

Came that time when we saw another ship, and then another, circling and circling afar. And then another and another. And at last understood that the ships of the world were caught in some titanic swirl of water currents that had drawn most of them into this whirlpool where we now circled steadily nearer and nearer to each other.

And that day when we touched, bumping sides with the round topped, weirdly carved side of a stranger ship, and cast grapples and made fast. Only to find we could not speak any of us their languages.

Gradually, as the days passed, more and more great egg-like ships gathered in the vast whirl, a kind of Sargasso of wreckage and flotsam and arks of the deluge.

One by one, we signaled these. But we were all of us helpless within our sail-less and unpowered, unoared, egg-like ships. We could do no more than stand on the top hatch and wave our

hands at the strange people we occasionally got near enough to see on the tops of the other ships. Two of them were from our original sending, our own ships built on the mountain-top before the fall of the moon.

I surmised that if this whirl of sea left all these various refugees from as many separate nations of the earth, it would be a kind of Tower of Babel condition when we did settle to earth and contact each other.

Lorn laughed to hear me guess these future incidents, and waved her hand in the old mysterious gesture. And that unseen weird power of mind, the breath of Jorgyn, the life-blood of The Mother, formed those images which were the best magic of the Haxas. In the image, she strove to read the future, and together we peered at the many ships at last settled again on the wet wrecked earth.

Together, we watched the meeting of these fragments of many races, of many great states, watched their discussions and their near to warring arguments as to who should be their leaders, what their actions.

And together we watched the images die away without revealing anything we longed to know. And Lorn wondered why, and I reasoned that there was nothing to tell that we could understand, since the old lands were gone and new ones were rising from the sea. All the future was new before us, and there was no familiar place or people or thing to tell us of.

Even as the visions said, so did it occur. The vast heaving of the sea lessened to near stillness, the constant storms abated into daily squalls, the whirling of the great watery vortice that had caught us slowed. And though we could not know it, even as these motions became less, so did the water's height become less. For as the water's moun-

tain-high-tide motions ceased, as the waves ceased, so did the peaks of the water's height lower, level off, and the land emerge again. So came the day when we sighted land. Land.

It was a happy feeling, a joy swept through us all to know the terrible time was over.

When we first set foot on the muddy soil, and walked out on the firm ground of Mother Earth again, it was hard to realize that this earth was now a new world. That nothing was left of the old life, that all must begin again from nothing.

As we began to make camp out of the wreckage and flotsam that was continually cast up by the receding seas, we began to realize this more and more strongly.

In the distance of the wide and rocky plateau on which our ship had settled, we could make out other of the circling arks from strange lands settling, and out from the great wooden eggs poured the peoples of alien lands. I knew there would be trouble when I saw how many different breeds of men were deposited in this vast whirlpool, and now I knew it more than ever. From the first days came their scouts, stealing near with drawn bows and suspicious faces, or riding to us over the rocky, wreckage strewn ground. The air smelt of death, of rotten bodies, of dead fish and the mud of the bottoms of the seas. And as the riders drew near, the future smelled of trouble and death, too.

We went out to meet them, mounted on the few horses we had ourselves brought aboard as food if needed, and though their faces were friendly enough, one had foreboding.

There were now a good dozen of the strange arks, which we could count from an eminence near which our ship had stopped its voyage, and of these but two were of our own building. These

three ships, our own people, had gathered together in one camp near the biggest of the arks, the one in which Lorn and Bryn, Halvar and Hrothgar and myself had voyaged.

To me, the problems presented in making a new way of life for these people were eclipsed in interest by the fascination of seeing here in one place representative groups of people from a number of widely scattered sections of the pre-deluge world.

There were the Chaldeans, led by Xisuthros in a gigantic vessel. Their strength was as great as our own, for it was a gigantic vessel, nearly 400 yards broad and many more in length.

There were the Greeks, in whom I was most interested, led by two warriors named Deucalion and Pyrrha. And there was a small group of Indians led by Satyavatra.

There was the family of Noah. But they were a bit clannish, and appeared to be convinced that they were alone in the world, for they ignored everyone and withdrew across the horizon as quickly as the waters would let them, looking for a place to settle and take care of the large number of animals they were shepherding.

There was a ship full of black men from Africa, Masai, led by Tumbainot.

There was CocCox and his queenly wife Xochiquetzal, together with several score other Mexicans, in a ship made of a single great cypress trunk, hollowed out and provided with a keel to keep it from rolling over and over.

As the heavens cleared off and finally became more blue than they had ever been before, we noticed a cessation of a peculiar clanging, bell-like sound from underfoot. The only thing I could explain as being the cause of this sound was the rock itself. It seemed to me that the terrible concussion of the shock when the moon had struck the

earth had set up a ringing sound within the rock, and that the shuddering, vibrating rock of the whole earth had made this sound for weeks. But we had not heard it clearly until the waters had died and receded and left the sound ringing out clearly in the air.

Gradually, as the days passed, there grew up around our original camp a heterogeneous city, many bloods from many races. The Haxas, perhaps the most able minds of all the peoples there, awed them with their powers; and Bryn and Lorn, Halvar and Hrothgar, became the chief figures in the ruling councils. The Haxa priests seemed content to take up their ancient role of advisers, and I was content to watch the new beginnings of man on the new world that was emerging from the waters.

What became of that people, what city that place became in our modern history books, I will never know. What became of Bryn and Lorn, of all those whom my affections and loyalty clove to, I will never know. For, as the last signs of strain and terror and danger left us, and our life began to take on an even tenor of growth—as it became ever clearer that the natural causes of wars, over-population and lack of land, were now for a long time disposed of by nature—as life became even and balanced and even Halvar's will to power became blunted over the lack of opportunity for domination—the Earth Mother, Fjorgyn, began to make preparations to return me to my own time.

It was, of course, Bryn who told me that my time was up and that any plans or designs I had of remaining here among these first settlers of the new earth were premature.

It was sad as we stood in the night, watching the now diminutive moon receding ever farther from sight on its long orbital flight away from the earth,

small now as a robin's egg, waiting for the reaching power of the mysterious life of the inner earth to seize one man and return him to his home. What was Fjorgyn; and how could moderns be so wrong in ignoring all the teachings of man's past in failing to understand that such mighty lives did exist in the great masses of matter and flows of energy? What other beings of immutable mysterious powers existed in space, in the exchange of stellar energies among the far-flung planets? That they did exist, I knew now. But that they should ever stoop to minute, despicable, ephemeral man for any reason, to even notice one as myself, was perhaps the greatest mystery of all.

The terrible black swish struck from beneath. And the fair face of Bryn, the wise, mysterious smile of Lorn, Hrothgar, Halvar, all of my friends, were suddenly blotted out. That barren flood-washed world, sprouting in rebirth, was wiped out forever by Fjorgyn's manipulation of the matrix of time itself. What does she do to transplant material through the very fibres of time itself, and place it upon a street that is not yet existing, from a land long passed away? Time is a thing too great for the mind of man to consider with correct vision. It is a dimension, it is a thing too great for our puny minds to see.

* * *

ASK JORGYN got up now from the chair, where his words had held me for so many hours, and clapped his hat on his head.

"And that is my story, believe it or not. I have been to the past, called there by the need of a people whom the-only God-that-lives-for-us loved long ago. They still exist, to her, just as they did then; and she can exist in the past or the future or in many such dimensions;

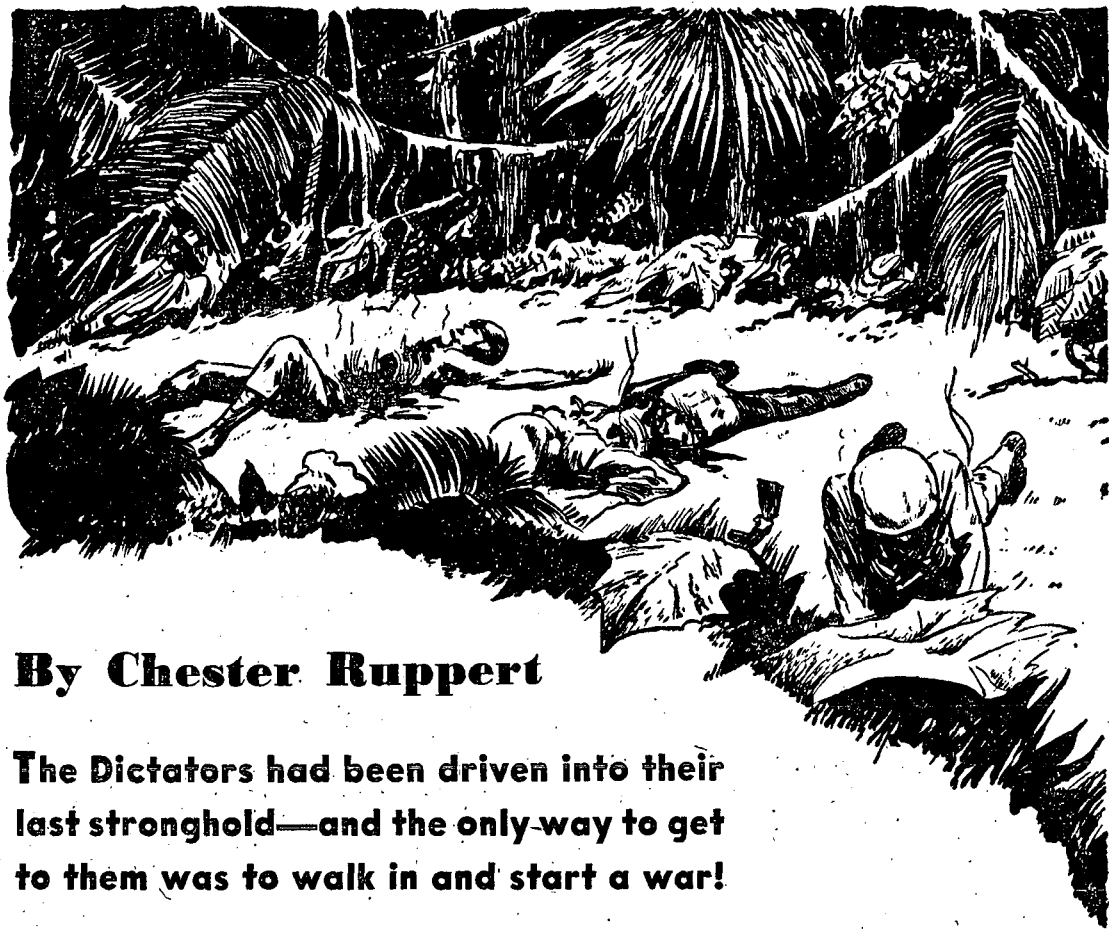
unknown to us. However you may think of it, that is what has happened to me. I was hurled into the past, I filled a need by counseling the building of ships, of explaining how such ships might be built to resist the terrible waves of the deluge. Man, I have watched the very moon fall from the skies."

His big deepset eyes looked into mine for a grim second. "You know it happened, for you saw me disappear. I am sorry I can't give you a better account of that pre-deluge life, but I only saw a small segment of it, after all. There were races then, spoken of by the Geats around their fires at night, mysterious and powerful races of ancient heritage of wisdom, beside whom their own Haxas were as children. But these people were few in number, and I met none of them. There was a mightier past on earth than any I have learned of, even in my experiences among the Geats. But the deluge wiped out the last traces of that mighty past. There was an Atlantis, for the Geats spoke of vast cities and of machines that even I could not understand, but they must have been completely swallowed up by the receding girdle tide of the falling moon, after it struck and fled again into space.

"I have tried to give you a hurried picture of a mighty occurrence in the past that I lived through. I don't know how you receive this, but at least you must be aware now that life is not the simple hum-drum pattern that we think, but is made up of tremendous forces and entities beyond our minds' grasp. That was a great deal to learn, and now, good night, my friend."

The Norseman went out into the night, and I sat looking into the fire. After a time, I tore up my notes, for how could a man tell anyone that *the moon bounced, once, long ago?*

THE END



By Chester Ruppert

The Dictators had been driven into their last stronghold—and the only way to get to them was to walk in and start a war!

The LAST STRONGHOLD

THE Seattle Post Intelligencer was really the first paper to carry the headlines: The news came over the wires at just the time of the morning when all papers east of Seattle had gone to bed. None of them thought it important enough to pull the presses and put it in. The P.I. wouldn't have, either; but it came over the teletype in time to put it in.

George Sandow, veteran newsboy, was the first one to announce it to the world at large. It hadn't even gone out

over the radio when he picked up his bundle of papers and strode rapidly down Pine Street, keeping ahead of his fellow merchants so that he could catch a few sales on his way to his corner.

He didn't even take time to read it; just read the headlines and began shouting in a monotonous repetition:

"Peeyiyyy — mornin' pepahhh—nature of universe solved by American scientist."

After he had fixed his voice "in the groove," so to speak, he let it repeat

There was a sudden, terrifying burst of flame and smoke from the breast of each man, and he collapsed in a smoking heap on the ground, a shattered hulk.



endlessly while his eyes roved in search of customers.

As he crossed the street at Fifth and Pine, Jerry Hyslott stirred restlessly in his sleep and turned over onto his back without waking, as he did regularly every morning at precisely two A.M. when George Sandow crossed the street a half a block from his window, droning his sales call.

And as George Sandow became quiet long enough to hand Jim Hagen a paper at the bus stop and pocket the nickel handed to him, as he did every morning, Jerry Hyslott choked and sputtered, then turned back on his side as George again took up his monotonous chant, which gradually faded into the other morning noises as he made his way down the street.

Jim Hagen glanced at the headlines, briefly at the column to the right and saw that it was too long for hasty reading, shrugged his shoulders, and turned to more interesting news.

George Sandow seldom read his papers. He wasn't quite sure what the universe was anyway. So he didn't read about it. Jerry Hyslott was asleep, and anyway he wouldn't get up in time to read anything before going to work.

The paper sold the same as usual that morning, but only because all the readers were concerned about little Annie Rooney who was again in the clutches of Mrs. Meany.

A West Seattle bus broke down at First and Spokane street on the way to Harbour Island, delaying the passengers fifteen minutes, so Gertrude Martin, Oscar Botts, and Henry Fowle read about it.

Actually, it wouldn't have made the headlines if there had been a fire, a hold-up, a raping, a train or plane crash, or somebody important had said something during the previous evening. But there was NOTHING, so the desper-

ate editor had made the most of nothing.

The news made the headlines in Portland, San Francisco, and Los Angeles for the same reason.

Two hours after it went over the wires it was followed by the news of the shooting of Mrs. Baker, a sixty-seven year old negro woman in Alabama, by a twelve year old white boy in "self defense," so it was shoved over to the inside of the front sheet of the early afternoon papers.

The radio carried the news briefly. It was the same on all stations, read directly from the teletype sheet by the local news announcer.

"Headlines in the news. Sixty-seven year old Alabama negro woman shot by twelve year old white boy. Toll of dead in last week's train wreck mounts to thirty-three. War tension in South America mounts. Theory of universe of Regor Maharg verified in laboratory at California Tech.

"A sixty-seven year old negro woman was shot and fatally wounded by twelve year old Ronald Duncan at Guntersville, Alabama, at ten o'clock last night in self defense when, to quote him, 'I was playing with my dad's coon gun out in the vacant lot. Suddenly she appeared on the path in front of me. It scared me so much I shot her. Anyway, why should an old woman be walking across our vacant lot?'

"Three more victims of the train crash at Spokane, Washington last Tuesday died during the past twenty-four hours bringing the total to thirty-three. The latest casualties are Mrs. G. A. Stevens, of Los Angeles, who was en route to Chicago, George R. Ahlquist of Spokane, just coming home from a business trip to Portland, and Arthur Gates of Seattle, who, with his wife, was starting on a vacation trip to Europe. Mrs. Gates was not injured.

"War tension in South America mounts as Argentina sends ultimatums to three bordering states. President Julio Heinrich demands bases in all bordering states as a measure of 'security' against attack.

EXPERIMENTS which have been under way at Cal Tech for the last six months have verified beyond dispute the validity of the theory advanced by Regor Maharg in a pulp fiction magazine three years ago, so say Harry James and Don Rystack, young physicists on the staff of the Institute. Dr. Morrison, head of the staff could not be contacted. Professor Myerslee of M.I.T. says about it, 'Hardly possible. I have read parts of the theory myself and after finding several things that did not agree with my theory on mass-energy variants which has been accepted by every physicist in the world, I did not pursue it further. A solution to the nature of all reality is a dream that no sensible scientist concerns himself with. In this day of specialization it is generally conceded that no one man can grasp enough of the intricate workings of the universe to co-ordinate them into a consistent, workable theory that accounts for everything.'

"Dr. Farmer of the University of Washington says, 'Absolute tommyrot. I used to know Maharg when he was a student here. Always going off on a tangent. Brilliant student, but couldn't stick to his lessons. Always arguing. A renegade even then. I wasn't surprised when he blossomed out in a pulp magazine. In spite of his brilliance he would never have made a good teacher. Not the proper temperament.'

"When asked if he had ever read Maharg's theory, Dr. Farmer replied, 'Never got around to it. Out of my line anyway. Oh, of course I've heard some talk about it. His meddling with the

metaphysical societies discredited anything he could have to say anyway. No accredited scientific publication would carry his stuff even if he submitted it to them, which he didn't. A black sheep if there ever was one.'

"Among the younger scientists Dr. Blakely of Chicago University says, 'The next few months will bring out some startling things. The really crucial tests will be made when the army space ship goes to the moon next month. Then we'll know for sure.'

"And now for the local news. But first an announcement by your local station . . ."

THE afternoon newscasts carried more details. The crucial experiment performed at Cal Tech had been on the energy release during atomic fission as a function of the loss in mass, or as Regor Maharg insisted on stating it, the occulting change as a function of nuclear structure.

More authorities were quoted. Dr. Blakely stated that among the various tests on the theory to be made during the rocket flight would be the accurate measurement of power consumption during flight through a vacuum at high speeds. The theoretical power consumption by conventional theory and by Maharg's theory had been computed to the last decimal place. There was such a difference between the two figures that the measurement would be decisive.

Later, free flight orbits would be made around the earth in various orbits in the plane of the ecliptic and out of it to determine other predictions of Maharg's theory.

One enterprising reporter got a brilliant idea and interviewed several leading religious figures. Reverend Hamling of the North Congregational Church of Springfield, who was a national figure,

said, "Why not? The workings of God are not beyond understanding. It seems perfectly sensible to me that it should finally be discovered how the universe works. Science has been working at it long enough!"

Reverend Blankowiskz, head of the Amalgamated Pentacostal Churches of America said: "The work of the Anti-Christ. The Bible says that in the last days the very elect shall be deceived. I have read much of the works of this Regor Maharg. In every field he attacks the teachings of the Savior. I call on all who will listen to turn away from the Anti-Christ and give their hearts to God."

Reverend Horstman, president of the Five Point Church of America, said:

"It is a sign of the coming of the Lord. It is HIS revelation as revealed to this man. I have read his work. Truly inspired. He is casting the money changers out of the temple of God and ushering in the new dispensation as prophesied in Revelations. God bless him."

Dr. Kline, president of the Spiritual Temple of Truth said:

"There are some who would think this Regor Maharg insane. I am one of them."

Mr. Bate, director of the Association for Spiritual Research in America said:

"There are some people stupid enough to believe this man doesn't know what he is talking about. I am NOT one of them."

And so it went. As one reporter put it:

"I wish something would happen. We're sure getting hard up for news when we have to chase a thing like this around. Isn't it about time for another ax murder to pop up?"

JULIO HEINRICH'S small, piglike eyes held a gleam of amusement as he looked over the assembly of uncom-

fortable men in front of him. The perfectly-tailored uniforms resplendent with gold stars and other military insignia could not disguise the fact that none of them were military men.

"Now listen to me," he said smoothly in Spanish, with only a slight trace of German accent, "you are not in your universities now. I am not a patient dean, only anxious to keep you satisfied with your stupid lives. You are in the army and my word is law. I could have you all shot this minute and no one would dare dispute my order."

"What I want," he went on, "is for you to master this Regor Maharg's theory and get me some results. I want weapons! Weapons the world has never dreamed of! And I want them quick. While the rest of the world is sneering at Maharg I want results. And I am going to get them. Your records have been carefully examined. You all have outstanding ability as scientists. I won't take any excuses. Every word Maharg ever wrote is being flown down from the United States. It will be here by tomorrow morning. Master it. Anything you want for research you get. Even if it costs billions!"

"May I say something, sir?" Dr. Fernandez, the most renowned physicist in all South America spoke up.

A flash of annoyance crossed Heinrich's face, to be wiped out by an overly friendly smile.

"Of course, of course, my dear doctor," he said.

"What if Maharg's theory is all wet and won't produce these super weapons you want?"

"That will be too bad for YOU," Heinrich said in a voice that told all too obviously what would be the fate of these men if they failed.

He looked at them silently for a moment and then abruptly turned and walked out of the room.

After the door slammed on his retreating back an excited discussion broke out.

"Why, it's practically a death sentence already," Dr. Fererez, the mathematician, exclaimed in high pitched Spanish. "Maharg claims that there is no conversion of mass into energy in atomic disruption!"

"And he claims that the loss in mass between hydrogen and helium is not a loss in mass!" Dr. Fernandez broke in.

"What of the things he says of an electric current?" Dr. Garcia y Prada said in a hopeless voice. "He says that the current equals the product of the density of free electrons in the conductor and the velocity at which they travel under a given electromotive pressure!"

"Our lives depend on the works of a mad man," moaned Dr. Fernandez.

"Mad is a mild word for it," said Dr. Lopez, the physicist. "He claims that when a nucleus acquires an electron in a certain way, it just moves at light velocity through the ether! Imagine that! Just moves! What about the conservation of energy?"

"We are lost," Dr. Fernandez spoke in a voice loud enough to drown out the others. They immediately became quiet. "We are lost," he repeated, "because we know there is no possibility of Maharg's theory being correct, and even if it is I don't see how it could produce any super weapons on short order. But we must study it and master it, no matter how insane it is. It just might be that it can give us an idea that will save our lives. Right or wrong, it is a new slant on things. We have hope."

"Yes, we have hope," the rest murmured.

REGOR MAHARG sat at a large desk, papers piled on either side of a twenty-year-old Underwood Stand-

ard, his eyes fixed in a dreamy stare, and his long, muscular fingers a blur of motion at the keys. From time to time the fingers ceased their mad motion for a moment, then took it up again.

At Maharg's back was a frosted glass panel in a door, with the legend, PRIVATE, appearing in reverse through the frosted pane.

The desk phone behind the typewriter rang softly. Maharg picked it up and said:

"Yes?"

"Mr. Maharg, a gentleman to see you," the voice of the secretary in the outer office spoke.

"Who is he?"

"He is a Sir Jim-eh-nez Pee-drone," she said slowly, evidently reading from a card.

"You mean Senor He-may-neth Pay-drone," Maharg said, chuckling.

"I guess so," the secretary answered doubtfully. "The card says he is a representative of the Argentina Copper and Smelting Corporation."

"Send him in," Maharg said, and dropped the phone back on its cradle. Regretfully he looked at the half-filled sheet in the typewriter. Then he stood up and stretched his long arms and arched his back, flexing his cramped muscles.

The door opened and a man tall as Maharg himself stepped in, closing the door softly behind him. The aquiline face was dark, almost to the point of blackness. The blue eyes were clear and piercing, and the high forehead and sharp crease between the eyes bespoke of keen intelligence.

He advanced with a wide smile that displayed even, white teeth. Shifting the folio he was carrying from his right hand to his left, he put out his hand:

"Ah, Mr. Maharg. I have heard so

much about you." Glancing around the plain office with its cheap, littered desk and thin rug, he remarked, "I had expected more pretentious surroundings for one so famous as you."

Maharg shrugged indifferently.

"Perhaps I don't need to impress people," he said.

"Oh, but you DO impress me," said Senor Pedrone quickly. "Perhaps more favorably than if you had been overshadowed by your furniture. I am somewhat of an artist, if I may say so, and I am aware of the importance of the central figure in a picture dominating the scene." He smiled hopefully, watching for the effect of his remark.

Maharg, knowing it was expected of him, looked flattered.

"What can I do for you?" he asked, taking the outstretched hand of his visitor and shaking it.

"That is the trouble with you Americans," Senor Pedrone said laughingly. "Always right to the point. Now if positions were reversed and you were calling on ME at my office, I would invite you to join me at the nearest bar for a cocktail before mentioning the subject of business."

"As a matter of fact," said Maharg abruptly, "I am very busy. If you were an American I would have told the secretary to have you drop around later. You might say that international courtesy, or just plain curiosity prompted me to interrupt my work to see you."

"Very well then," said Senor Pedrone. "I represent, among other interests, a very large South American holding company. Among their interests are the Argentina Copper and Smelting Company, the Continental Railway Company, and many others."

He opened his folio and brought out a Western Union envelope.

"I have just received this telegram instructing me to contact you and make

you a certain offer," he said, spreading out the telegram and offering it to Maharg.

It read "CONTACT MAHARG AND OFFER HIM THE WORLD WITH A FENCE AROUND IT TO TAKE CHARGE OF OUR RESEARCH DEPARTMENT. WILL HONOR ANY AGREEMENT YOU MAKE WITH HIM. INSTRUCTIONS GO TO BANKER AT SAME TIME TO HONOR ANY DRAFT TO MAHARG. NOTIFY ME AT ONCE ON RESULTS."

It was signed, "E.T.P."

"Hmm," Maharg hummed thoughtfully. "Sounds interesting."

"I'm fairly conversant with the workings of our research department," Senor Pedrone said. "Also with the ideas of Enrico Perez. I am quite sure that what he has in mind is for you to direct the personnel of the research staff along lines that will bring out new developments which your work makes possible, and outline the procedures you think will bring results."

HE HESITATED a moment, as if considering his next remark.

"You realize, of course," he continued, "that we must believe you are correct in your assertions or this offer would not be made. Also, we will naturally expect to make a great deal of money from your work, and at the same time share a large percentage of this with you."

"Yes, of course," echoed Maharg. "Suppose you give me a couple of days to think this over."

"Would an offer of ten million dollars in cash at once and a guarantee of at least five million a year for the next ten years help you to decide right now?" Pedrone asked softly.

"Uh, no, I don't think so," Maharg said tonelessly. "It might make me has-

ten my reply by perhaps twenty-four hours, though," he added with a smile, leading Senor Pedrone to the door.

"Call tomorrow at about the same time," he concluded the interview.

When his visitor had left, Maharg went to the phone and dialed a number. He scratched his head thoughtfully while he waited for a response.

"Ostrander, please," he said into the mouthpiece. After a brief wait he began talking swiftly.

"Hello, Bill. This is Regor. I want you to do something for me in a hurry."

"What? Oh. Yes drop everything. This is more important than anything else you could possibly have."

"Huh? You sound like you were off the wagon. Sober up. I want you to check on a guy named Senor Jimenez Pedrone. Also on the syndicate that owns the Argentina Copper and Smelting Company and the Continental Railways Company of South America. It's a native corporation. Also an Enrico Perez who is president of the holding company. Everything you can find. What?"

"I don't have to check," came over the phone. "The whole thing is owned by the Argentina dictator, Heinrich. He runs the whole shebang."

"You don't say," said Maharg softly, dropping the phone slowly.

He glanced at the typewriter once again, regretfully, and speared his hat from the coat tree on the way to the door. With a brief "Take it easy, Gerty," on the way through the reception room he left the office.

As his Buick nosed its way across the sidewalk out of the basement garage of the office building and turned right, into the traffic, a car pulled slowly away from the curb and followed, keeping two or three cars between it and Maharg all the time.

He drew to the curb two blocks past

the Federal Building in the first open space he could find. Then he walked swiftly back. The sedan that had followed him was double-parked in front of the Federal Building.

As Maharg left the sidewalk and started to climb the wide granite steps something gouged into the small of his back, and a low voice growled:

"All right, buddy. Take it easy and do what I tell you, if you don't want to get hurt."

Maharg glanced over his shoulder, took in the figure of the man behind him, the car, double-parked, and the three faces staring at him intently behind its door windows, and stopped.

"What do you want?" he asked dubiously.

"Just get in that car that's double-parked, without a fuss, and everything will be just fine," the man with the gun said, mouthing his words so that they would be indistinct to the people passing nearby.

"Then what?" asked Maharg, not moving.

"Then we go see the boss," was the brief answer.

Maharg hesitated a minute, then moved toward the car. Once inside he glanced back at the Federal Building.

"Too bad I didn't phone instead," he thought to himself.

The car moved along with the traffic, the four men silent and uncommunicative. Maharg thought of the similar experiences of fiction characters, and wondered if he should try to start something. Visions of a blow on the head, lying in a cramped position on the floor with a gunman's feet in his face; the "heroes" in fiction who suddenly opened the door and dashed to safety, who signalled a cop in various ways, flashed through his mind, only to be discarded.

The car picked up speed on an arte-i

rial and soon reached the city limits. Shortly after, there was a sudden blur of motion which Maharg sensed more than saw, then blackness.

The man at his side put the blackjack back in his hip pocket, rubbed his hands together in a satisfied manner.

"That ought to do him until the boss gets in the air."

No one else said anything.

THE car turned into a private airstrip and came to a stop before a small hangar. One of the hangar doors slid open and the driver moved the car inside.

Senor Pedrone stepped up to the car and glanced eagerly inside. His teeth flashed in a triumphant smile when he saw the unconscious figure of Maharg.

"Aha! So you were going to the government, were you, my friend," he said to the unconscious figure. Then, to the other occupants of the car. "Tie him up in that straitjacket over there on the bench and then strap him into the back seat of the plane."

As soon as this had been done Senor Pedrone took a fat wallet out of his hip pocket and gave each of the men a crisp fifty-dollar bill.

"Here is the rest of the money. Very nice work. Maybe I will use you men again sometime."

"Yeah," one of them answered.

The car backed out of the hangar and headed toward the highway. Before it had gone a mile a plane rose from the field and pointed its nose southward.

HARRY JAMES and Don Rystack were bent over a desk examining a paper covered with scribbings. Each had a pencil in his hand and each was contributing to the figures on the paper.

"According to Maharg," Harry was saying, "the free electrons in a con-

ductor may be considered in the same light as a fluid in a pipe. They keep their distance from one another because of mutual repulsion. The electrons at the surface of the conductor are kept from escaping because when they get a little way from that surface they are held by the attraction from the atoms that form that surface."

"Either that or they are pushed inward from the surface by the repulsion of the atoms that form the surface," put in Don.

"Could be," said Harry doubtfully. "But you must remember that the conductor is neutral. Since there are free electrons it means that the atoms are positive, not negative. But anyway, these free electrons drift around in the conductor just the same as water molecules do in a water pipe."

"And the density of free electrons is different for different materials," suggested Don.

"That's right," agreed Harry. "Now, some force is applied that causes the electron gas to move in one direction at some part of the conductor. This causes the whole volume of electrons to move along the conductor, all keeping their respective distances from one another."

"Mm hm," agreed Don.

"Well, this flow is called current. Its measure is in amperes. But it really is the product of the velocity of the current and the density of the electron gas in the conductor, or, in other words, is the measure of the number of electrons that pass a given point in the conductor in a unit of time."

"What's the voltage drop then?" asked Don.

"Voltage drop is really pressure drop," answered Harry. "It's a complex thing. The compressibility of the electron gas goes into it, and becomes a dominant factor in high frequency

alternating currents. The back pressure caused by induced currents in the surrounding media cause part of it. And what we call the resistance of the conductor is really a complex thing. An electron approaches one of the atoms in the conductor. It attracts a prominent proton in its structure or repels a prominent electron, or both. As the free electron passes the atom it causes the atom to swing around. The next free electron continues the swing, so that the atom keeps spinning. The spinning of the atom causes the nucleus to present a series of alternating electron and proton fronts in any direction at right angles to the axis of the spin. This sets up a wave in the ether."

"The rate of spin determines the frequency of the wave," suggested Don.

"Yes," agreed Harry. "Now, all these atoms are spinning, but they conflict with one another. This causes them to attract and repel one another, and set up a gradually increasing rate of individual motion, which means that the temperature of the conductor is rising."

"These ether waves also travel outward in all directions," added Don, "and are heat waves, or infra-red."

"That's right," Harry said. "But the spinning nuclei set up a back pressure against the flow of the free electrons, increasing the resistance to free flow. This is borne out by the increase of resistance with increase of temperature."

"Check," agreed Don.

"Now, the flowing current of electrons has a certain amount of inertia to stoppage," Harry continued: "This inertia is what produces surges and harmonics in circuits, and what causes a broken circuit to arc. And since the individual electrons flowing along a wire are taking all sorts of paths, back and forth across the conductor, when they are going at a high velocity they

sometimes escape from the surface of the conductor. This is what produces arcing at high voltages. There are lots of angles to this which can be checked for verification. For example, in a hot conductor the surface barrier is not so efficient, causing a higher percentage of loss into the atmosphere."

"SO FAR so good," cut in Don. "But what I haven't got quite straight is this. Why does a tube with a good vacuum in it produce hard x-rays, while one with some gas in it produces soft x-rays?"

"The tube with the vacuum in it allows free passage of the electrons that escape the surface of the filament, so that they accelerate to tremendous velocities. When they enter the plate they are going at many times the velocity they would have in passing through a gas and being retarded by the gas nuclei. Fewer of them get across, but they go at greater velocities. Get it?"

"Yeah," Don answered absently, keeping his mind on the picture being described.

"They are slowed down right away after they pass a few atoms," Harry went on, "but while they travel so fast they tend to produce a much faster spin in those surface atoms. The faster spin makes for higher frequency of the ether wave. In other words, hard x-rays."

"All that sounds very nice," Don said. "But how does Maharg account for the fact that atoms only emit certain frequencies? According to this picture, any atom will emit or produce gradually increasing frequencies. And how does it account for the hanging together of a light wave into bundles of energy? And how does it account for the varying of the index of refraction of different frequencies?"

"There is where it gets complicated," answered Harry. "It takes serious

study to see all the intricate interplay of neighboring spinning nuclei, the critical spin properties of various atoms and time for increase to critical value from zero spin under a given intensity of wave front. The structure of various nuclei must be taken into account, as well as intervening nuclei. Dispersal and reflective properties of various substances must be analyzed also."

"Yeah, I know," said Don. "I've been through most of his theory myself. The reason I brought it up was because I wasn't too sure I had it right."

"I'm glad you did, Don. It helped me to understand what I knew about that phase of it better, myself." Harry straightened up.

Facing him across the room were three figures. In the hands of all three were ugly looking automatics pointed at him. One of the figures was that of Senor Pedrone. How long the three men had been standing there listening, Harry did not know.

MAHARG'S first waking impression was of a dull throbbing in his head. It roared in his ears, beat at his skull, and sent waves of intense, splitting pain through his brain.

Without opening his eyes he tried to move. His arms were held fast to his waist by some impediment. He opened his eyes to see what it could be. The sight of the plane cockpit brought memory back with a rush.

And with memory came the obvious reasons for his capture, and the offer that had been made to him that morning. Or had it been that morning? He had no way of knowing how long he had remained unconscious.

Glancing over the side of the cockpit his eyes encountered nothing but the glassy surface of the ocean. It might be the Atlantic or the Pacific, but Maharg guessed it to be the Atlantic.

He was being taken to Argentina. Argentina, held in the grip of a Nazi who had fled from Germany when it collapsed and who had gained a tight grip on the reins of government in friendly Argentina with the help of the thousands of Nazis already there.

Heinrich either knew much about the new theory or he was taking a big gamble that it would work.

"What he doesn't know," Maharg said to himself with a bitter, angry smile, "is the quality of the American mind. The philosophy of force led Hitler to his doom, and Heinrich will go the same way."

With that mental remark Maharg resigned himself to his plight and enjoyed the trip almost as much as though he were an unfettered passenger on a commercial passenger plane. In fact, so strong is habit, that when he became hungry he glanced around for the stewardess without thinking, then chuckled mirthlessly.

The ache in his head gradually grew less until, when the coast of South America crept above the horizon, it had retreated to the small section on top where whatever had struck him had landed.

THE plane interested him. It was of the atomic powered steam turbine variety and obviously much in advance of the government models he had read about in the aviation journals. He knew the general principle upon which they operated. A radioactive pile with rate of disintegration partly mechanically controlled and partly regulated by water. It almost automatically turned water into high temperature steam in a flash tube, the steam ran the turbines and then went into the wings which were practically nothing but condensers.

Maharg estimated the speed of the

plane to be about seven hundred. Just under the velocity of sound. He did this by watching how long it took a small island that passed underneath to go from directly below to the horizon, estimating the altitude of the plane from the rate at which he had to breathe, based on past experience in open planes. The mental exercise helped pass the time.

When that was done he started mapping out various ways to beat Heinrich at his own game. It would be interesting. The Nazi naturally would not kill him so long as there was any hope of getting something out of him. The theories were all published and available to Heinrich, so obviously what he wanted was the superior knowledge of the theories that he, Maharg, would be assumed to possess.

"If I could only have a couple of boys down here to work with me that would think the same way I do—" he mused thoughtfully.

MAHARG relaxed in the lawn chair by the side of the rectangular pool. Idly he watched the gold fish swim in its shallow waters. The place was a copy of some Spanish palace he had seen the picture of at some time or other, but he couldn't quite remember the name of it. The word, Taj Mahal, kept coming to mind and obscuring his attempts to remember the right one. It was supposed to be the most beautiful word in Spanish.

The wide sidewalk of concrete that surrounded the pool melted into the shadows of the Spanish archways of the building at one end. The orange stucco walls—or were they adobe?—were shaded by the overhanging eaves of the red tile roof.

The name wasn't Shangri La either. Maharg cursed his memory. He wondered if the statues that bordered the

sidewalks were reproductions of the original, too.

An Indian servant came noiselessly and refilled his coffee cup.

The plane that had brought Maharg had gone inland a few hundred miles after reaching the coast. It had come down on a steel mesh runway, and almost at once had been surrounded by dark skinned men in light tan army uniforms, all of whom had rifles.

Pedrone had climbed out of the front cockpit and leaned into Maharg's cramped quarters, loosening the straps and the strings of the straitjacket with a broad, brilliantly white grin splitting his dark face.

He had dropped to the ground and disappeared down a path through the dense vegetation that crowded the edges of the landing field by the time Maharg had completely freed himself and climbed out of the plane.

The soldiers had surrounded him in a dense body and escorted him through the jungle to this place where he now was. The Indian servant had appeared shortly after his arrival with a steaming tray of good American food.

The food was now gone, the supply of coffee seemed inexhaustible, so Maharg waited.

He was beginning to get drowsy when a door in the deep shadows of one of the archways opened and the teutonic figure of Heinrich stepped into view. The Nazi presented a ludicrous appearance to the American, with his closely cropped hair, his piglike face with small, closely set eyes. The ten-inch white cigarette holder tipped with a black cigarette, the monocle with hanging black ribbon, the open neck short sleeved tan shirt, and brief trunks that revealed stocky, percheron thighs, might better have come from the disrespectful imagination of a g.i. caricaturist than from a serious attempt of

a man to present an imposing appearance.

Maharg watched his progress down the path, one arm dangling into the pool, a finger idly stirring the warm waters, and an amused expression on his face.

"Ah, Mr. Maharg," Heinrich said, his face creasing into a broad smile, "I see that you are quite relaxed after your long trip."

"Oh, yes," Maharg replied languidly. "I always try to relax, wherever I am. I suppose I owe my—ah—trip to you?"

"Oh, tut tut, Mr. Maharg," Heinrich said, moving his short arms in a gesture of dismissing something of no importance. "What is past is past. I see that you are an intelligent man who is above holding spiteful grudges. You must grant that from my standpoint it was the only thing that could be done under the circumstances."

Maharg grinned mirthlessly and said nothing.

"You have no doubt guessed why you are here," Heinrich continued after a brief pause. "But perhaps you entertain certain prejudices. I wish to discuss the whole thing with you in a friendly manner."

"I'm aware that you, along with the rest of your countrymen, entertain ideas about me which are, to say the least, distinctly hostile." He now put on an expression of resigned martyrdom. "I am perhaps the most misunderstood man in the world."

"With your theories you demanded of the world a fair hearing. You shrieked from the pages of magazines, shouted at people through the pages of various periodicals. And gradually people DID listen to you. Now, all I ask is that you grant me the same privilege. Listen to me."

"Okay," Maharg said. "Go ahead."

"IN MY youth I was an artist," Heinrich began at once. "Even today I occasionally paint. But I was also an historian. I studied the history of mankind and found that it is a history of war and domination. I found that millions of people in each generation are slaughtered on the field of battle. I read the history of your American west in its first beginnings, when the man who lived was the man who practiced the quick draw from his earliest youth onward. And gradually a picture began to form in my mind. A picture and a resolve. A dream, you might call it. A dream which became the dominating passion of my life."

He stopped as the Indian servant padded over the lawn with a tray upon which rested a large pitcher full of a pale liquid and tinkling ice, and two tall glasses.

When these had been placed on the table between Maharg and Heinrich and the servant had retired, Heinrich began again as he filled the two glasses.

"This dream envisioned a world in which there can be no war. Just as law and order had to come to your wild west, so also law and order must come to the nations. Hitler had that dream. I saw he was a kindred spirit and joined him. But when I saw him go mad under the pressure of the awful responsibility, when I saw him go blindly berserk and turn in suicidal attack on Russia, I knew that he would fail. So—I laid my own plans. They are maturing here."

"I do not want power for myself," he continued. "There is only one way to world peace. Permanent world peace. That is for one force to subdue the whole world and force down the national barriers that create wars. When this is done, and the world becomes one big nation, policed by peace officers of every race, then and then only can

peace be assured.

"You had your war of secession," Heinrich said, carefully depositing his cigarette stub in the ash tray on the table. "Your government FORCED the south to remain in the nation against its will. You SEE the results today. One big happy nation. Suppose war had not been resorted to? Force? America would be at least two separate nations, both so weak that neither could be called a world power. What is happening to the world now? Independent nations bickering in a hopeless attempt to preserve law and order among a group of selfish, individualist nations, each of which thinks it is the most important nation in the world!

"Look at the philosophy upon which the government of Russia was built; that a people who are not capable of governing themselves must be placed under a competent dictatorship and so educated that they WILL be able to govern themselves. See how it has worked there. The nations of the world are demonstrably incapable of living together in peace. They MUST be forced to do so, and the idea of permanent peace inculcated into the growing youth of them all.

"That was Hitler's dream. He failed, so the world brands him as a mad, power-hungry tyrant. If he had succeeded—Ah! IF he had succeeded, the world would this moment be on the path to sure and permanent peace."

"Go on," Maharg said softly, as Heinrich paused, a look of rapture trying to mold the fleshy folds of his face.

Heinrich resumed in a normal tone of voice. "I feel in you a kindred spirit, Mr. Maharg. With your supreme gift of logic you will be able to put aside the prejudices that your government's propaganda machine has built up in the American mind. You will be able to grasp the logic and simplicity and

workableness of this dream. And, seeing, you will be able to join me as full partner, our partnership proclaimed to the entire world. With your superior grasp of the workings of nature, and my military machine and wealth of resources, we will be able to accomplish what Hitler could not!"

"Then I am not to be a prisoner, to be milked of whatever worth I may possess and discarded?" Maharg asked incredulously.

"Not if you react as I hope you will," Heinrich replied.

"WELL," Maharg said with a quiet smile, "if I may be permitted to exercise this gift of logic I have, as you so clearly pointed out, UNLESS the world is licked, you, and I if I join you, would be proclaimed mad, would-be conquerers.

"And the assumption that we could succeed presupposes several things which might not become fact. First, that out of my theories can come weapons so superior to any the world has that we would be sure to win. Second, that we could produce those weapons in time to use them. You will grant that if Hitler had waited another five years he would have been in a better position so far as weapons are concerned to have won the war.

"Offhand, I can't think of anything to produce even ONE superior weapon. Of course, I have lots of ideas that might lead to something like that. Your assumption that I WOULD have is no doubt the reason for my being here. BUT, production of such things takes more than brains. It takes skill. Skill that can only come from specialists."

"I have those specialists," Heinrich cut in eagerly.

"Oh! Those," Maharg said disparagingly. "They are not what I mean. They know nothing of my theory. They

would have to spend many months just mastering the new math concepts, such as EFFECTIVE VALUES and SPACE PROBABILITIES. Steeped in the old school and its concepts, they might not be capable of doing so.

"What I mean is some of the younger American school who have already mastered it. Some who have already proven their ability with it, and their faith in it."

"Like those two—?" suggested Heinrich.

Maharg nodded, his face inscrutable.

"That can be arranged," Heinrich said confidently. He did not notice the imperceptible gleam of triumph that crept into Maharg's eyes.

"I would suggest that meanwhile you pull in your neck a little," Maharg said suddenly with sharp emphasis.

"What do you mean," Heinrich asked, a flush of anger rising above his neck, and a sudden cold glint appearing in his beady eyes.

"I mean you had better retract on your present demands for military posts in other countries. For the time being, of course," he added with a sly, insinuating smile, "until we have something real in the way of weapons. You wouldn't want to pull Hitler's stunt of not being in a position to use the super weapons when they come, would you?"

"You are right," exclaimed Heinrich, rising. "I'll tend to those two little things at once. Your—ah, assistants should arrive by tomorrow, if all goes well. Meanwhile, I have your word that you will remain and work with me?"

"Yes, you have my word," Maharg answered simply.

"Then," Heinrich answered pompously, "you have your complete freedom. There's a plane in the hangar at the field where you landed, at your disposal. The men stationed here will get

orders to obey your every command. Anything you wish for your pleasure or for our business at hand, you need only express your wish."

With that he left. For a while after he left, Maharg remained where he was, a thoughtful look on his face. Then he rose and drifted toward the castle.

HARRY and Don, being younger and also less fatalistic in their makeup, did not enjoy the plane trip. Neither of them being alone, they did not retire into their thoughts, but vented them on each other, gaining a modicum of mental satisfaction in doing this, but nothing constructive. They had put up a struggle at the outset of their meeting with the three thugs and had been overcome immediately, to be carried out of the deserted science building to the car parked outside, unobserved and unrescued.

In the plane they were not able to resolve the question of where they were going and why, as had Maharg, not even connecting their abduction with the recent announcement of their verification of Regor Maharg's theory.

They, too, were given the fish pond as a relaxing sedative to their nerves, without success. Only the continued presence of native soldiers, wearing their uniforms and rifles as incongruously as a Hereford bull would wear a Paris gown, kept them from foolishly leaping the wall that kept out the untamed jungle, and madly dashing into the clutches of the untameable Argentine on a senseless search for that which had been left thousands of miles to the north—freedom.

They had eaten the food placed before them so as to be ready for anything that might come. It remained, undigested, in their stomachs, gastric juices withheld, blood blocked into brain and muscle by constricted arte-

ries, the adrenals working at full capacity.

Maharg and Heinrich had watched them from the protection of the patio. The wrought up condition of the two new arrivals was viewed by Maharg with a great deal of satisfaction, for it supplied an obvious motive for the suggestion he was about to make.

"Perhaps it would be wiser," Maharg said casually, "if I saw them alone for a few minutes before you put in appearance. They will recognize me from my picture which they have undoubtedly seen, and will listen to me. I think I can bring them around."

"Signal me when you think I should come out," Heinrich said with a shrug of his thick shoulders.

So Maharg pushed open the door to the garden and strolled leisurely into the sunlight toward the pair, his hands in his pockets, and a bored, mischievous smile on his lips.

"Mr. Maharg!" Don Rystack exclaimed, recognizing him. "I'm Don Rystack and this is my partner, Harry James. What's this all about?"

"Listen carefully, both of you," Maharg said. "Do you think you can understand Latin of the porcine variety? It used to be quite common when I was in grade school, but I understand that it found disfavor among the generations that have appeared since then."

"I—inkthay ohsay," Don said clumsily.

"Well, suppose we intersperse our remarks with a little of igpay atinlay, and touch them up with a little ubleday talkrazinon sensinsuch to eepkay thegize in the know nothing," Maharg said, letting his eyes dart momentarily toward the stolid soldiers standing nearby.

With that he told them of the events of the previous day. He concluded, still in the mixture that only a native-

born American could have understood, by saying, "It was my idea that brought you down here. I needed help. Of course I might have escaped, but that would only have left Heinrich in possession of the field. His scientists MIGHT have stumbled onto something by themselves. Whether they did or not, a war was impending. Maybe you didn't notice, but that plane you were brought down in is atom powered.

"By gaining Heinrich's confidence we will at least be where we can get him sooner or later. By working with him we will be in a position to thwart him. Play the part of guys who have always secretly yearned to be big shots with lots of power. That's right down his alley."

With that, Maharg signalled Heinrich to appear. He enjoyed the obvious effort it took the two young men to keep from laughing at the ludicrous Nazi, and admired the way they played their part.

THE days that followed in rapid succession were a revelation to Maharg, Don, and Harry of what can be done with absolute, unquestioned, despotic power. Heinrich's word was law, and Maharg's slightest suggestion was carried out instantly.

Yet such was the native cunning of this Nazi who had survived the perils of Hitler's caprice, the dangers and treachery of a strange country and a strange people, to bring them to heel, that not once could the three have successfully harmed him or even escaped from the country. They were free in almost every sense of the word. They could walk down a street unaccompanied, talk to their fellow Americans whom they occasionally met.

They dared not send so much as a letter, however, for fear of arousing the suspicion of Heinrich. And they did

not voice their plight to any American they did see, lest he become the victim of the machine also.

Meanwhile, things were shaping up. Under the overhanging protection of the surrounding jungle near the imitation Alhambra which, they had learned, was Heinrich's secret retreat, a huge laboratory was springing into existence.

An army of workers swarmed all over the place, clearing underbrush, constructing concrete floors, walls, machine foundations, and covering them with insect-treated plywood.

Then the stream of materials, machines, and instruments began to flow into the settlement. With them came the Argentinian scientists, sweating in their uniforms, walking in the shadow of what they believed to be certain, eventual death.

During the two weeks it took to accomplish all this Maharg, Don, and Harry kept much to themselves, carefully considering every line of procedure they could think of.

"The problem we face," Maharg stated simply at the first opportunity, "is to devise some instrument which is an impossibility under conventional scientific concepts. One that our host will believe answers HIS problem, but which we can use to end his career in a way he can't see ahead of time. And one which will also be overwhelming evidence to the world of the correctness of my solution to the nature of the universe."

"Isn't there some way we can build an anti-gravity shield?" asked Harry. "Your theory states that gravity is a neutralized electrical field. It analyzes the underlying structure of the field components. A sailboat of a certain type can be made to sail into the wind. Can't we figure out something that will do that using the etheric wind of gravity?"

"I won't say it can't be done," Maharg conceded, "but I've spent a lot of time trying to think of some subterfuge that would produce anti-gravity, and haven't accomplished anything except eliminate a hundred possibilities."

"Linearly unbalanced nuclei, held captive, and polarized in one direction, are the only possibility. With the equipment we can get now it might be worth a try if we don't think of something easier. Off-center unbalanced nuclei, as you know from my theory, are the radio-active elements. Their spin is produced by the unbalance and maintained in the hard x-ray range, for the most part."

"How could linearly unbalanced nuclei be held captive, since they travel at light velocity?" asked Don.

"As you know," explained Maharg, "they move because the pressure of the negative ether swarm is less than the positive. So when any nucleus has an electron on one side and a proton on the other, the pressure from the ether, or universal swarm, is less against the electron. Immediately the nucleus accelerates until the increased velocity equalizes the pressures.

"Within an area highly charged with static electricity—electrons—this difference in pressure tends toward equality, so that theoretically there should be some static potential at which they stop."

"I see," broke in Don. "Then if we can produce such a field and find some way of keeping the unbalanced nuclei all pointed in the same direction, we have a static driving force that can go in any direction, even into space, without any consumption of power!"

"That's close enough," Maharg granted. "We would be tapping the basic power of the ether itself. Something science fiction writers used to

dream about, and still do."

"Well why don't we do it?" asked Harry enthusiastically.

"It's too much of a gamble," Maharg said. "There is the probability that the setup necessary to effect such a thing would be too heavy to be moved by the few unbalanced nuclei it could keep captive."

"Oh," Harry said, disappointed. "Well, what else can we try?"

"Blamed if I know," Maharg exclaimed in exasperation. "After all, a theory can't remake the world overnight. When millions of men have spent thousands of years on the theory they ought to be able to produce things we haven't even dreamed of. But WE have to think of something right now!"

THE three men relapsed into gloomy silence. Suddenly Don Rystack jumped in excitement. "I've GOT it!" he exclaimed.

"Look," he continued. "We analyzed, or stated, rather, the problem all wrong. We eliminated one other possibility."

"What's that?" asked Maharg and Harry together.

"Our primary objective is to end the menace of Heinrich and his machine. Right? Well, suppose we consider faking something like anti-grav, but really use known principles to make something that will wipe him out!"

"Like what, for instance?" asked Maharg.

"Like a high frequency magnetic field," suggested Don.

Maharg was silent for a moment, thinking it over. "I see what you mean," he finally said.

IT WAS pathetically easy to convince the native scientists that they were going to construct an anti-grav setup. In fact, they were so anxious to accom-

plish something, and so convinced that the Americans were with them in Heinrich's plan for conquest, that they did not bother to try to understand the details.

A week of feverish activity produced imposing results. Another week of impatient waiting brought the giant modulator tube from the coast where it had been made to order.

Heinrich himself, with a huge automatic bouncing at his hip, attended the trial run of the machine. Three of his trusted lieutenants also attended, their Teutonic features alight with the hope their belief in his machine inspired.

Lined up at attention were over a hundred native soldiers, rifles ready for instant use.

Heinrich strode up to Maharg with an air of boisterous camaraderie, and asked, "How long will it take after the machine is started before we see the results?"

"About ten seconds," Maharg answered with a smile, glancing at the blue steel of Heinrich's automatic.

"I hope it's a success," the Nazi said. "All the factories on the coast are ready to convert to it if it works. In a month we should be able to hand the rest of the world an ultimatum."

He turned and rejoined his henchmen.

"What do you think will be the range of this thing?" muttered Harry out of the corner of his mouth.

"About fifty yards," Maharg replied, barely moving his lips. "That should be far enough to include all of them."

He picked up a thick stick a yard long. With it he pushed home a huge copper single pole switch. Harry and Don had similar sticks, and pushed in similar switches on the panel attached to the huge device. The modulator tube filament slowly lit up inside the huge plate. The tube, fifteen feet high and

six feet thick, was an awe inspiring sight.

The three men standing before it were motionless, beads of perspiration dotting their foreheads. Harry and Don had their eyes on Maharg, waiting.

Maharg glanced at Heinrich, standing ten feet away, out of the corner of his eye. This was the crucial moment. If Heinrich suspected—

He banished the thought with an imperceptible shudder and nodded his head at Don and Harry. The two stepped forward and threw in the last two switches. Then they stepped back. Unnoticed, they took a firm grip on their heavy sticks.

The seconds ticked by. One. Two. Three. Maharg found himself holding his breath. He let it go with a sigh and forced himself to breathe deeply for the ordeal ahead.

Four. Five. Six. He noticed that Harry was trembling as if with the ague. Don was white and tense.

Seven. Eight. Suddenly there was an explosion behind them followed by an exclamation of pain. Other explosions followed like the popping of fire-crackers.

Then, and not until then, Maharg dared to look around. The few soldiers who were on their feet were scattering into the jungle. Most of them, however, were writhing in agony on the ground, the smoke of burning flesh and clothing rising into the heavy atmosphere.

Heinrich and his lieutenants were on their backs, motionless. Heinrich's right leg lay a few feet from his body. Dirty, yellow flames rose from his chest through the charred uniform.

Maharg stepped up to him and saw that he was still alive. His small, closely set eyes were bloodshot. They reminded Maharg of the eyes of a bull

snake he had cut in two with a hoe once when he worked in the harvest fields. He shuddered involuntarily.

"How did you do it?" Heinrich gritted out between tightly clamped teeth.

"Just the principle of the electric furnace," Maharg said softly.

"You will—never get away—alive," Heinrich muttered, his head drawing back in agony. A violent spasm shook his frame and he became still.

"Does it matter?" Maharg whispered to the deaf ears.

"How the devil could it burn them so completely?" asked Don.

"Isn't it obvious?" Maharg said. "They wore steel mesh bullet proof vests."

He turned and looked at the group of Argentine scientists, huddled in a terrified group to one side. Their clothes were charred where a belt buckle had heated, or a pocket knife had burned through.

"No danger there," he muttered. Then, "Well, let's see if we can get a plane away from the native guards and get the hell out of here."

MAHARG sat at his typewriter, a blank sheet of paper in it, and stared through the window behind it at the varied spires of Chicago's skyscrapers.

It had been two months since his return from Argentina. The death of Heinrich had precipitated a revolt which swept the last of the Nazis out of existence. The new regime, in a fit of exalted hero worship, had made Maharg an honorary native of Argentina and erected a monument in the jungle where Heinrich had met his end, naming the spot as the honorary birthplace of Regor Maharg.

The army rocket had gone to the moon, and the delicate instruments it

carried had borne out the theory to the last decimal place.

Six letters lay on the desk beside the typewriter. They were from six universities inviting Maharg to accept honorary degrees at impressive ceremonies. There had been five the day before, and these six brought the total to over fifty, from all over the world.

There were other letters. Offers from Hollywood for the rights to produce his life story on the screen, which had already been declined. Offers from various companies to take charge of their research laboratories and name his own figure, offers of almost every description, from endorsement of toothpaste to the presidency of a brewery with a handsome slice of the preferred stock.

Maharg's eyes held a wistful look. Behind him the door suddenly burst open and three men stepped noisily into the room.

"Hi, Regor ol' boy," one of them greeted his back loudly.

Maharg turned, a wan smile on his lips, and gave a half hearted, "Hello, fellows."

"What's the matter, Regor?" one of them asked.

"I don't know," Maharg said lamely. "Yes. I do know, too. I feel like a hunter who can't hunt any more. I feel like a pianist who has lost his hands. I feel like a gambler in a state where there is no gambling. I feel like an eagle with his wings clipped."

"You feel like a dog tied to his kennel?" one of the men asked. "You look it."

"That's right," Maharg said solemnly. "I think I'm going to go quietly nuts. All my life I've had a lot of fun picking holes in everything. In high school I campaigned for Al Smith when all the rest of the kids were for Hoover. I'll never forget what a thrill it was when they held a school election and

when the principal read the results, four thousand eight hundred or something for Hoover and ONE for Al Smith, everybody turned and looked at me.

"Ain't it awful, when you look at it squarely. I've always been fighting battles, or maybe windmills. I've enjoyed the ludicrous, and when I solved the riddle of the universe I really had something to carry as a banner, as I put on my creaky armor and rode out on my bony steed to do battle.

"When the people around me said, 'Look Don Quixote, you are only fighting windmills,' my nostrils would quiver and I would exclaim indignantly, 'You have deluded yourselves into a sense of security by convincing yourselves that the enemy on prancing steed is only a windmill.'

"NOW what happens," Maharg went on. "Suddenly I am the victorious knight in shiny armor. I could seriously advance a theory that Saturn is a huge globe of lemon and orange sherbet, and it would take three generations to bring out a man who would dare dispute it. Suddenly nobody will argue with me.

"Do you realize how awful that is?" he asked in a wondering voice. "There is NO ONE who would dare argue with me any more."

"I think I know what you mean," Bill said. "But suppose no one had ever believed you and you had had to go on trying to convince them all your life?"

"Ah," said Maharg, a look of dreamy delight spreading over his face. "That would have been wonderful. To stand alone against the world to the end. To stand feebly in my old age, the light of battle in my ancient eyes. To pound my bony, gnarled fist against a table and creak in my senile voice. Creak defiance to the world! And die firm in the conviction that future generations

would vindicate me."

"Won't you honor us by—"

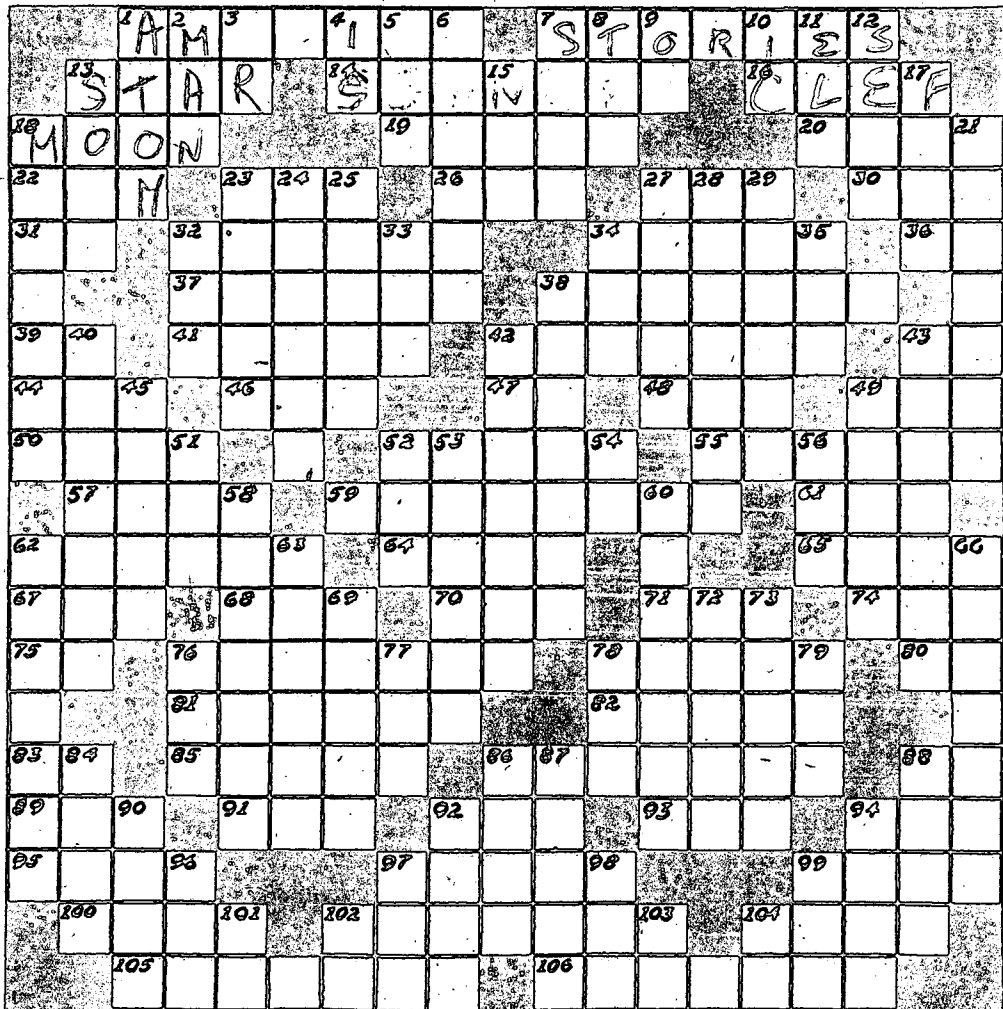
Bill winked at the other two men. "I think success has gone to his head. Come on you old—. We're going over to Tony's for lunch. Or should I say,

"Don't call me that," Maharg exclaimed. "Haven't I told you I'm trying to quit?"

THE END

AMAZING CROSSWORD PUZZLE

By JAMES SHWILLER



HORIZONTAL

- | | |
|--|-------------------------------|
| 1. Bewildered | 19. Red fluid |
| 7. Tales | 20. Snakes |
| 13. Heavenly body | 22. Tree of the Genus Ulmus |
| 14. Meeting of spiritualists | 23. Army of the United States |
| 16. Symbol used to indicate a certain tone (music) | 26. Skill in performance |
| 18. Satellite | 27. Royal air base (abbr.) |

- | | |
|--|---|
| 30. Witty saying | 70. Like, belonging to (suffix) |
| 31. Preposition | 71. Before |
| 32. Sentence structure | 74. Dry (used of wine) |
| 34. God of the winds (myth.) | 75. Time saver (abbr.) |
| 36. North America (abbr.) | 76. Hermit |
| 37. Travesty | 78. Reproductive organ |
| 38. Pertaining to course of a heavenly body | 80. 501 |
| 39. Conjunction | 81. A division |
| 41. In the front | 82. Vacillate |
| 42. A Turk | 83. A maiden loved by Zeus |
| 43. 105 | 85. A step, or set of steps |
| 44. Ribbed fabric | 86. A people who preceded the Aztecs in Mexico |
| 46. Rested | 88. Half the width of an em (print.) |
| 47. Verso (abbr.) | 89. A filthy place |
| 48. Cardinal number | 91. Steamship Yukon (abbr.) |
| 49. Continue to exist | 92. Simpleton (Colloq.) |
| 50. Nimble (Colloq.) | 93. Adit (abbr.) |
| 52. Stone slab used by ancient Greeks as grave-stone | 94. Portion of a curved line |
| 55. Ethiopians | 95. Hastened |
| 57. Bamboo-like grass | 97. Plane surface of a cut gem |
| 59. Musical instrument | 99. Gaelic |
| 61. Electrical engineering society (abbr.) | 100. First murderer |
| 62. Mend | 102. Equidistant from certain points |
| 64. A conflict | 104. Expectoate |
| 65. Quantity of matter | 105. Period including both the miocene and the pliocene |
| 67. United States Senate | 106. Resembling a man |
| 68. Belonging to Egyptian Sun God | |

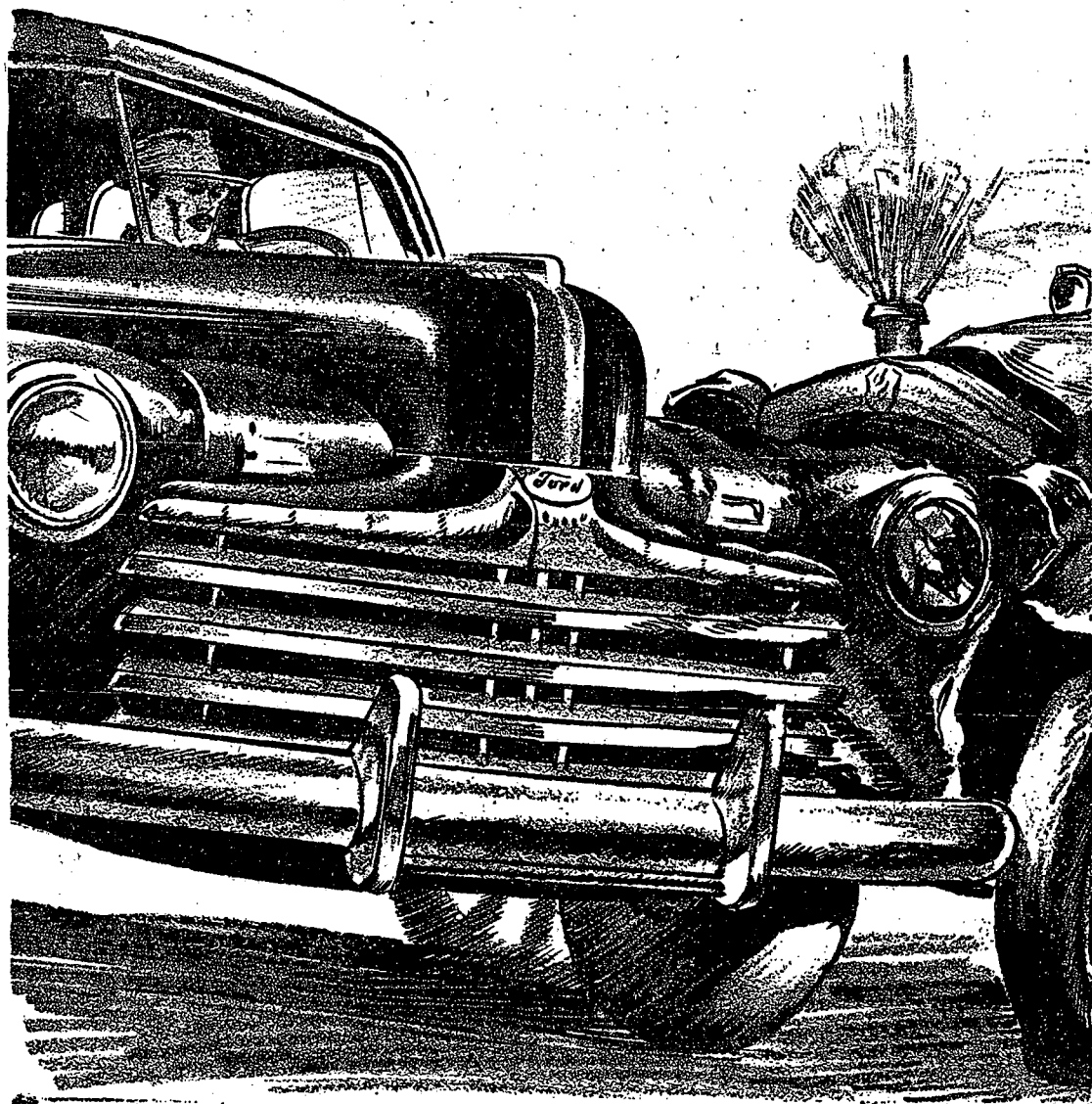
VERTICAL

- | | |
|---|--|
| 1. Most overworked subject in science fiction | 49. Plane surfaces |
| 2. Homo sapiens | 51. Yes |
| 3. Measure of area | 52. State labor board (abbr.) |
| 4. Exists | 53. A religion of China |
| 5. Bird's beak | 54. In, into (prefix) |
| 6. The milky way | 56. Jewel |
| 7. One of a Gaelic people | 58. Points out a course |
| 8. Spread for drying | 60. Rabes |
| 9. Bone | 62. Lustful |
| 10. Preposition | 63. Spinal column |
| 11. Immeasurable or indefinite period of time | 66. Knowledge, as of principles or facts |
| 12. Prow | 69. Craftily |
| 13. To fly alone | 72. Jet black |
| 15. Conjunction | 73. Construct |
| 17. English college | 76. Robot statistical society (abbr.) |
| 18. Visitors from space | 77. Employ |
| 21. Suffers extreme hunger | 78. Bird of prey |
| 23. Belonging to native nurse for children in India | 79. Possessive pronoun (abbr.) |
| 24. Fanciful | 84. Auricular |
| 25. Ermine or weasel | 86. Sensitive mental perception |
| 27. Adam link | 87. Musical drama |
| 28. Food; nutriment | 88. Former (archaic) |
| 29. Inflammable gaseous hydrocarbon | 90. Bring forth young |
| 32. Mineral spring | 92. Acting rationally |
| 33. Append | 94. Dry |
| 34. Electronic and radio technician (abbr.) | 96. Perish |
| 35. Saint (Span.) | 97. Low, swampy land |
| 38. Calcareous concretion in inner ear of vertebrates | 98. Convert into leather |
| 40. Quell | 99. Upon, above (prefix) |
| 42. Employ excessively | 101. A denial |
| 43. Hybridized | 102. Civil engineer |
| 45. Gets ready (colloq.) | 103. Low Dutch (abbr.) |
| | 104. To such degree |

WINDOW TO THE FUTURE

By PETER WORTH

**There was only one piece of glass like it;
which was a good thing, because what happened
to those who bought sections of it was awful!**



"THAT'S the third time that window's been broken in the past year!" George Saunders said testily. "That does it. It may cost a little more, but I'm going to have shatter-proof glass put in this time."

"I wish you would, darling," Mary Saunders said to her husband. "I get tired of it too."

"Let's see—" George thumbed through the directory. "Acme Glass Company—Devon three, four oh oh oh."

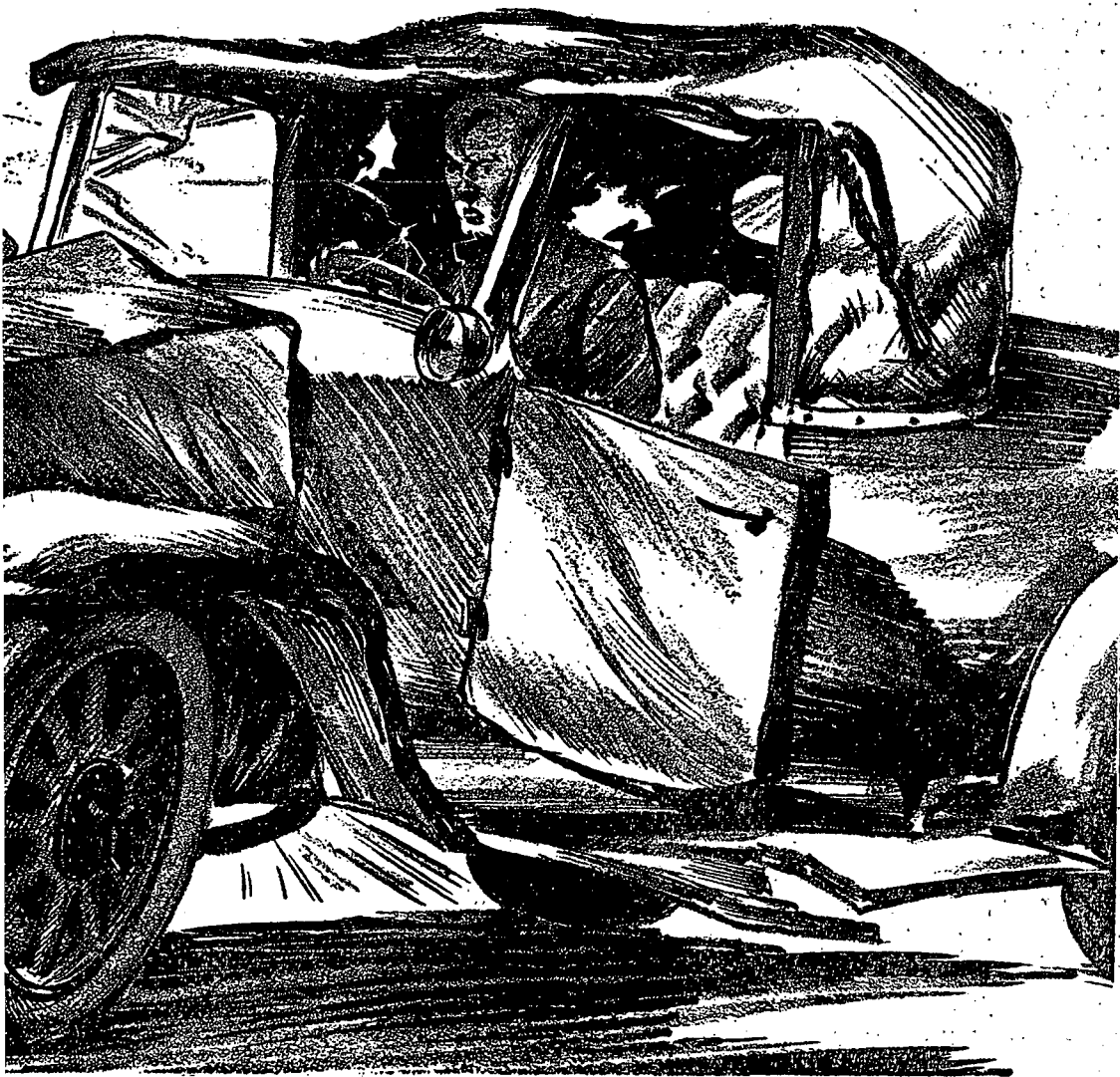
"Acme Glass Company," a male

voice answered. "Mr. Schultz speaking . . ."

* * *

"Well now," Professor Blackstone stepped back to admire his carpenter work, chewing thoughtfully at his moustache, "I do believe it's ready for the glass."

"Yes, Professor Blackstone," the sixteen-year-old assistant agreed dutifully. He looked sourly at the opening in the wall between the two rooms—the laboratory, and Professor Blackstone's private office. He knew the sole reason



He put on his brakes too late . . .

for the window going in was to enable the professor to see that he kept working.

"Let's see now," the professor said, thumbing through the directory. "Acme Glass Company . . ."

* * *

"Hello? Acme Glass Company? This is Gerald Peters. Got my windshield put in yet?"

"Just a minute, Mr. Peters," Rollo Fields said, thumbing through the pile of orders on the desk. "Yes, it's ready."

"Fine. I'll be right over to get my car."

"That another order?" Bill Harper asked, sticking his head in the doorway.

"No, Bill," Rollo said. "Just Peters asking about his windshield. You ready with those two orders on the south side?"

"Yeah. All ready to go."

"Well, what's keeping you?"

"The Acme Glass Company," Bill answered. "Otherwise I'd starve."

"That's the spirit," Rollo said. "You cut the pieces out of that sheet that was broken?"

"Yeah," Bill answered. "Guess that's all we can salvage from it. Sure funny about that. I'd have sworn the way was clear when I carried it from the store room. I was looking right through it and didn't see that handtruck setting there."

He ducked out of the doorway and went to the company truck, whistling mournfully. He decided to go to the Saunders' place first, and climbed into the truck.

"**H**ERE'S your receipt, Mr. Peters," Rollo Fields said politely. "Send it to your insurance company and they'll reimburse you in full."

"Thanks." Gerald Peters folded the receipt carefully and shoved it in his coat pocket.

He left the Acme Glass Company office and found his car at the side of the building waiting for him. Behind the wheel he admired the glistening transparency of the new windshield. No more scratches that wore out windshield swipes.

With a smile at his inner secret of having broken the old windshield with a hammer in order to get a new one on his insurance, he stepped on the starter.

He stopped where the parking lot let out to the street while a car passed in front of his windshield. He stopped rather abruptly, because he had looked and the street seemed clear. Then suddenly this car was in front of his windshield and he had to jam his brakes to keep from hitting it.

"Funny how they always sneak up on you," he muttered to no one in particular, easing out cautiously.

He turned north. A car was just ahead of him, forcing him to slow down. He tried to get around it for three blocks, but cars were coming toward him and forced him back behind the slow poke.

A siren sounded behind him. He looked back. It was a police car signaling him to the curb. Wondering what the trouble was, Gerald Peters pulled into the curb and stopped.

The police officer leaned in the window and asked to see his driver's license, his eyes looking over the interior of the car suspiciously.

Obediently Gerald took out his billfold and opened it to his driver's license. The officer looked at it, grunted, and straightened up.

"Been drinking recently?" he asked.

"No sir," Gerald Peters answered. "I never drink this early in the morning."

"Feel all right?" the officer asked sympathetically.

"Never felt better," Gerald answered cheerfully.

"Then why in blazes don't you drive sensibly and stop acting like a kid in a jalopy?" the officer shouted, dropping his pretended politeness. "I watched you for three blocks. Of all the dumb idiots I've seen drive a car—what do you think it is, a bicycle?"

"I was driving sensibly," Gerald said, annoyed. "Are you sure YOU haven't been drinking?"

"SENSIBLY!" the officer snorted. "Do you call darting all over a clear street, spurting and braking, and honking your horn at nothing SENSIBLE?"

"What do you mean—nothing?" Gerald said, showing his teeth in what he could later testify was a polite smile—if it were necessary. "I was trying to get around that slow car ahead of me."

"There wasn't no car," the officer said with exaggerated patience. "You were all alone. I ought to give you a ticket for reckless driving but I won't. I feel sorry for you. Now get going, sonny, or I'll give you a ticket for parking by a fire plug—and I'll be having my eye on you, so drive like an adult for a few blocks, will you? Get going before I change my mind and take you down to the station for a mental checkup."

He took his foot off the running board and went back to his car. Gerald Peters watched him, an angry glint in his eye, then shrugged his shoulders.

The street ahead was clear now. A block and a half away the light had just turned green. Gerald Peters stepped down firmly on the throttle to catch the light before it changed.

The light changed to yellow just as he reached it. Too late to stop gracefully, he pushed the foot throttle to the floor to get across in time. There were no cars. The way was perfectly clear . . .

Then he heard his wife, Alice, say, "Run tell the nurse he's coming to,

Sisty."

He opened his eyes and saw he was in a hospital bed, and Alice, dark circles under her eyes, was looking at him anxiously.

"FIRST one I ever met that was out and out crazy," Officer Shelby said to Officer Browne between bites of hamburger. "First I see him pull out of the parking lot at the Acme Glass Company. He acts kind of funny even then, stopping his car abruptly like someone was in front of him when there wasn't. Then he starts down the street, going slow, and a couple of times he darts over to the left side of the street, then slows down and pulls back. There ain't a soul on the street, either.

"Finally he toots his horn several times. I signal him down and give him the riot act. He ain't drunk. His eyes are normal, so he ain't doped. I should have taken him in, I guess. Instead I let him go—and a block and a half later he runs full speed into heavy cross traffic through a red light like he's trying to commit suicide. When I catch up he's out like a light and his windshield's shattered—not to mention the whole side of his car and a couple of other cars that ran into him."

BILL HARPER tapped the last inch of putty into place, dropped his putty knife in his pocket, and rapped on the door. George Saunders opened the door, a piece of toast in his mouth, a briefcase in one hand, and his other arm struggling into the sleeve of his coat.

"Mm wuf wole tuck curf ut," he mumbled through the toast. He paused while he finished struggling into his coat to inspect the new window. It was slightly mussed with fingerprints, and had a new look to it.

He looked through it into the living

room. His wife, Mary, came to the door with her purse and was searching through it for her billfold.

Suddenly George Saunders' eyebrows lifted in surprise. Though Mary was standing in the doorway fumbling in her purse and talking to the glass man, she seemed to be in the living room, real as life.

George shook his head violently to clear his brain, and looked again. It was no delusion—too vivid and detailed. She was running the vacuum on the rug. Her mouth was open and moving like she was singing, but no sound came.

"That proves it," George thought to himself. "Delusion anyway."

Suddenly she looked up, looking right at him. Recognition lit up on her face. She dropped the vacuum cleaner wand and started toward him, then seemed to trip over the hose and fall. Her head hit the coffee table viciously.

"Mfs!tsk!" George said, struggling to swallow his toast.

"Did you say something, darling?" Mary asked, pausing in counting out the money to Bill Harper.

Bill's eyes turned from the window and settled on her. They had seemed wild, but now they became calm. They turned to the new window again, blinked, and turned back to her.

"Nothing," he said. "Only be careful with your work today, sweetheart. I wouldn't want you to get hurt."

He kissed her over Bill Harper's shoulder and hurried down the steps.

At the corner he caught up with Lester Jones who always caught the same bus with him.

"Morning, Les," he said.

"Mornin' George," Les answered.

They walked along in silence. There was a worried frown on George's face. Lester Jones noticed it but didn't remark about it. On the bus they found an empty seat for a change and sat

down together.

"D'you believe in premonitions?" George asked suddenly.

"Well—maybe," Les answered. He was going to say no, but decided if he did George would shut up, and his premonition might help pass the time.

"Well, yesterday I myself would have said no," George said, taking the half agreement to be an invitation to talk about it. "This morning when I got up I would have said no. At breakfast I would have said no."

"Yeah?" Les said invitingly.

"But now—" George hesitated. "When I was leaving the house this morning and my wife was standing in the doorway I glanced through the window to the living room and saw her in there just as real as life."

"No kiddin'!" Les said encouragingly.

"Funny," George said thoughtfully. "It was just as real as if she were really there. If she hadn't been standing right there in the front doorway. I would swear she was in the living room."

"Yeah?" Les prompted.

"Suddenly she looked up and saw me," George went on. "I mean she in the living room—you know what I mean. Anyway, she saw me and started toward the window. Then she fell over the vacuum hose and hit her head on the coffee table. It was as real as life—but she was standing right there in the doorway all the time."

"Yeah," Les said gravely. "That sounds like a premonition, all right—a real genuine premonition. You should have warned her."

"I did," George said.

"That's good," Les said, watching the street go by through the window. After a block he added absently, "Only if it's a genuine premonition it'll happen anyway, in spite of warning her."

"You really think so?" George asked

anxiously.

"If it was a genuine premonition," Les said authoritatively. "Of course, if it was only a pipe dream—"

"Maybe I should go back home and sort of watch out for her today, huh?" George suggested.

"Might be a good idea," Les agreed, turning his head to watch the street go by some more. "Only," he said after a block, "it might not be going to happen for a week, and you can't stay home for a week waiting for it to happen."

"Yeah," George said, worried. "Yeah. Maybe you're right. I warned her. Anyway—things don't happen that way, do they? I mean, you can't actually see the future like that—vivid. It must have been just a pipe dream."

"Probably," Les dismissed the subject.

"MR. BLACKSTONE in?" Bill Harper asked the sixteen-year-old boy who answered his knock.

"No," the boy answered. "He went out for a couple of hours. Want to wait?"

"I'm from the Acme Glass Company," Bill explained.

"Oh," the boy said. "Bring the glass in. The professor left the money for it with me—said to be sure and get a receipt."

Bill grunted. A few moments later he climbed back up the stairs with the two and a half by five foot pane. The boy held the door open for him and silently pointed to the rectangular opening in the wall, then stood back with his hands in his pockets to watch.

"What's your name, kid?" Bill Harper asked as he slipped the pane into position. He nodded his head in satisfaction at the perfect fit. So many amateur carpenters got the dimensions right but didn't get the opening square, so that sometimes a half-hour was wasted

trimming the glass to fit.

"Orville Sturn," the boy answered. "What's yours?"

"Bill Harper," Bill said. "How much money do you make working for the professor?"

"Fifty a week," Orville lied.

"Oh," Bill said. "Then you wouldn't be interested." He started nailing in the narrow strip that was to hold the pane in place.

"Interested in what?" Orville asked.

"Oh, we need a young man at the plant," Bill said. "But the salary's only forty a week."

"Forty a week!" Orville exclaimed in dismay.

"Yeah," Bill said, deadpan.

"Well, look," Orville said miserably, trying to get around his lie. "I—I've been thinking about a change. No future for me here. I'd be willing to—well, take a ten dollar cut in my salary to get a position with a future to it."

"Not much future," Bill said. "You can work up to my job if I quit or die—and make sixty bucks a week."

He glanced through the glass into the other room. A mouse of a man with a starved moustache had just entered and gone over to the desk.

"That's the professor," Orville explained.

Through the glass they saw Professor Blackstone look up and notice them for the first time. He rose hastily from his desk and started toward the door.

Bill and Orville turned to the door and waited. It didn't open. They looked through the window again. The office was empty.

"That's funny," Orville said. "And how did he get in there in the first place? There's only the one door. And how did he get out?" He scratched his unruly blond head absently.

"Well, he got in and got out," Bill said. "It doesn't matter, since you have

the money. Here's the bill. Fourteen dollars and thirty-seven cents."

Orville carefully counted it out, his eyes returning to the other office through the new pane of glass now and then in puzzlement.

Bill Harper signed the bill and pocketed the money. He had forgotten about his subtle ribbing of the teenager who was obviously not worth more than twenty a week of any man's money, he had discerned.

As he descended the stairs to the street he sighed with relief.

"That jinx pane of glass is gone for good," he mumbled. "Hope I never see another like it." With that he dismissed it from his mind.

NOT so, Orville Sturn. When Bill Harper left he turned his eyes to the other room. Through the pane of glass he saw the professor enter the room again, though he had not gone in through the only door into that room.

The professor turned his head and looked through the glass with a studious expression on his thin face. He paused and fixed Orville with a stern gaze.

Suddenly the professor ran toward the door as if he were going to come into the lab. The door didn't open. In a few seconds he appeared again through the glass.

He looked thoughtfully at Orville. Without warning he jumped toward the glass, making a horrible face and opening his mouth as if he were shouting—but no noise sounded from the office.

Orville jumped back in alarm. This seemed to amuse the professor. He paused in the center of the other room, scratching his chin absently, apparently thinking something over in his mind.

Orville became uncomfortable. With the professor looking he should be working. He half turned to start his work again. A spark of defiance rose in him.

He turned back and went to the door to the professor's office. The professor's eyes followed him. Orville determinedly opened the door and stepped inside.

The room was empty! Ready to turn and run, wondering where the professor could have hidden, Orville advanced into the room. He reached the center of the room and looked around.

"There's absolutely no place he could hide," he said aloud. "He isn't here."

He turned to the new pane of glass and looked through. His eyes widened in stupefied amazement. With a terrified squawk he ran from the room. Taking the steps two, three, and four at a time, he half-fell down the three flights to the street level.

At the street door he bumped into the professor who was just entering, and knocked him down. His wild eyes came into focus temporarily and saw who he had bumped into.

"The professor!" he said desperately. Then he was running down the street as fast as he could go.

"I wonder what's got into him?" Professor Blackstone mumbled, picking himself up off the steps. "I think I'll fire him when he comes back."

After he had picked up his packages he slowly climbed the stairs to his laboratory, chewing thoughtfully on his pale moustache, previewing in his mind the lecture he intended to give to Orville when he dismissed him from his employment.

The laboratory door was wide open.

"That's another thing," Professor Blackstone muttered. "Leaving without locking the door. Any street thief could come in and steal thousands of dollars worth of equipment."

He closed the door after himself as he went in. Crossing the large room he laid the packages on a bench. Then, for the first time, he noticed the pane

of glass in the opening he had made for it.

With a cluck of satisfaction he crossed over to it to examine it and see how well it fit. Not looking through it at first, he examined the wooden strip that held the pane in place.

"Nice job," he said aloud.

He raised his eyes to look into his inner office. He drew in his breath sharply. The hair on the back of his neck rose away from his scalp. His mouth dropped open, slack.

There was a man sitting at his own private desk, bent over, writing furiously on some paper. As Professor Blackstone stared, the man at his desk looked up from his work and turned his head to look through the window. The man inside was Professor Blackstone!

"Hey! You're me!" Professor Blackstone said to the man in his office. The Professor Blackstone in the office nodded his head and grinned broadly. Something seemed to strike him funny. He pointed at the professor and laughed. From all appearances the laugh was loud, yet no sound came from the office through the open door.

The hair on the back of the professor's neck was lying down again, now that the first shock was over.

"How can I be in there and out here at the same time?" he asked himself. Himself inside the office was still doubled over with laughter. It became infectious. Professor Blackstone chuckled.

Already he was beginning to suspect the answer. He went to the door and looked into the office. No one was there. He had not expected anyone to be there, least of all himself.

He entered the office and looked out through the window in the connecting wall of the two rooms. He didn't expect anyone to be there and was surprised to see Orville sitting on the bench by

the sink, smoking a cigaret.

Frowning in anger he went to the door and looked out into the laboratory. It was empty.

"Of course," Professor Blackstone said, nodding his head. "That clinches it. What a wonderful discovery."

He turned back into his office and went to his desk. Soon he was scribbling notes on paper, lost to the world around him. The pile of notes grew steadily . . .

* * *

"LOOK, Mary," George Saunders said into the phone. "Are you sure you're all right, honey?"

"Of course, darling," Mary answered. "What's come over you? You've called me and asked that same question three times in the last two hours. What's the matter, honey?" Her voice was soft, sentimental, slightly affected by the contagion of his worry.

"Nothing," George said gruffly. "Nothing. Only be very careful when you're vacuuming today. Maybe you'd better skip vacuuming, huh?"

"I can't," Mary said firmly. "We're having the Humphreys over tonight. I have to get the house cleaned up. You know that."

"Yeh, yeh," George said soothingly. "But couldn't you use the hand vacuum instead?"

"No," Mary pouted over the phone. "It's three times as much work."

"Please," George pleaded. "Just this once. Huh?"

"Well—" Mary hesitated. "All right. Just this once, maybe."

"Gee, that's great," George said happily. "Now I won't need to worry. G'bye, honey."

Mary made a face at the phone as she heard George hang up. It pleased her that he was so worried about her, even though it vaguely disturbed her. He had never been like that before, and he

seemed determined to make up for it all at once in senseless worry.

"A little white lie won't hurt me," she said to herself, "if it makes George stop worrying. I have no intention of using the hand vacuum. It would take hours instead of minutes to clean all the rugs with it."

She had intended waiting until afternoon to do the vacuuming, but with all the fuss she decided to do it right away. She started in on the bedroom rug. She found herself being jittery in spite of herself.

A half-hour later she was slowly transferring her jitteriness to anger toward George. When the phone rang again, for the fourth time that morning, she dropped the vacuuming wand and marched to the phone.

"How ya comin', honey?" George's voice sounded, meekly apologetic.

"Now listen here, George Saunders," Mary said angrily. "If you think I have nothing more to do than answer this phone all morning—"

"Why didn't you answer right away?" George cut in hastily. "The phone rang so long before you answered that I was worried."

"Worry worry worry," Mary said disgustedly. "If you must know, I didn't hear it because I was using the vacuum cleaner. What's more, I'm going to go on using it. And if you call up again this morning I'll—I'll—YOU—!"

She banged down the receiver, nodded her head in a "that'll hold you for awhile" gesture, and stalked back to the living room to begin her vacuuming there.

"OHMIGOD," George prayed desperately. "Let me out of here. She's using the vacuum cleaner."

He got up and went toward the boss' office with a wild gleam in his eye.

"What do you want?" Alvin B. Schwartztod said, glaring up from his work.

"My wife just had a serious accident," George said. "I've got to get home right away."

"That's too bad," Mr. Schwartztod said, his eyes relenting somewhat. "How'd it happen?"

"She—she tripped over the vacuum cleaner," George said. "She's lying there now—unconscious. I've got to go to her."

"If she's unconscious how did you learn about it?" Mr. Alvin B. Schwartztod asked suspiciously.

"S—someone saw her through the window on the front porch and just called me," George said, half-truthfully.

"Well—" Mr. Schwartztod hesitated.

"Gee, thanks," George said gratefully. Waiting for no more he dashed out of the room and through the office.

A taxi was cruising past on the street. He hailed it and glared worriedly ahead all the way out to his house.

"Wait a minute," he said over his shoulder, leaping from the cab the moment it stopped.

He ran up the walk and looked in through the window that the Acme Gass Company had installed that morning. The vacuum cleaner was there, but there was no sign of his wife.

"Thank God," he said, wilting with relief. He took out his keys and unlocked the door quietly. Pushing the door open he stepped inside.

"Ohmigod!" he moaned as he sank to the floor beside the unconscious form of his wife. She was exactly as he had seen her that morning through the window.

Picking her up he staggered to the door.

"Help!" he yelled wildly to the taxi driver. The driver, keeping his head,

closed the front door of the house before helping George with his unconscious burden.

"To the hospital!" George ordered unnecessarily as the car got in motion.

* * *

"YOU must leave now, Mrs. Peters," the nurse said respectfully. "You can come back for an hour this afternoon."

"All right," Alice Peters said. "Come on, Sisty." She paused half-way to the door. "You're sure the light was green and there weren't any cars, Jerry?" she asked anxiously.

"I'd swear it on my deathbed," Gerald Peters said solemnly.

"I believe you, darling," Alice Peters said in a tone of voice that implied she knew no one else would.

Outside the hospital room door she nearly bumped into a uniformed policeman.

"Humph," she said icily. "If he escapes before they knit his broken leg I'll bet you'll lose your job."

The policeman opened his mouth, then shut it again, wisely. His face was slightly red as he watched the backs of the woman and ten-year-old girl march coldly down the hall.

Two internes with a stretcher on wheels appeared and paused at the door.

"She gone?" one of them asked. The policeman nodded.

"Funny case," the other interne said with professional maturity that belied his appearance. "No alcohol in the blood, no signs of drugs. Apparently normal." He shrugged his shoulders to indicate that professional ethics sealed his lips on any further disclosure.

They pushed the stretcher into the room. Shortly they wheeled it back out. The policeman listened admiring-

ly to the smooth flow of warm, quiet profanity coming from the lips of the white-faced Gerald Peters.

"It may have been temporary insanity," he muttered as the stretcher and its burden disappeared through the elevator doors at the end of the hall. "He's perfectly normal now."

* * *

PROFESSOR Blackstone glanced up from his scribbling. The complex equations and chemical formulae he had written on page after page may have been meaningless, even to him; but he now had a comprehensive grasp of the essential factors.

Orville Sturn, seen through the glass, had hastily flushed his third cigaret down the sink drain and was crossing the lab to the door. The professor watched his progress, amused.

When he opened the door a stranger entered and talked to him for a moment. The stranger left, and returned a few minutes later carrying a rectangular pane of glass.

Professor Blackstone decided it would be wiser to leave and come back later. He went out into the lab and started to unwrap the packages he had laid on the work counter.

"There's no way to know when the man finished from out here," he said to himself. He waited until he thought the coast would be clear, then went back into his office and crossed to the desk. He sat down and started to glance over his last page of figures, then glanced up and saw Orville and the stranger staring at him through the glass. He rose hastily and left the room.

In the lab he put the bottles of chemicals on a shelf, then returned to his office. Half-way to his desk he turned and saw Orville, alone, staring at him through the glass.

He paused and fixed the boy with a stern, reprimanding gaze. He saw Orville begin to wilt in superstitious uncertainty.

"I'll scare the daylights out of him," the professor thought. He ran toward the door, as if he intended to rush out. Pausing a moment he went back to where he could see Orville.

The boy was standing there, a worried look on his face. The professor jumped at the glass, waving his hands violently, shouting. He was highly amused when Orville instinctively jumped back.

He stepped backward to the center of the office again and paused, scratching his chin absently, wondering what he should do next. Orville watched him uncomfortably a moment, then turned away, as if to go back to his work. But suddenly he turned, a defiant expression on his face, and headed toward the office door.

"Oho!" Professor Blackstone whispered. He stepped over to where he could watch the lab from the office to the hall door. Almost immediately he saw Orville run to the hall door, his legs working like pistons. "Just as I guessed," he nodded in self-satisfaction. "He saw himself out in the lab when he was in my office. It scared the wits out of him."

Chuckling, he sat down at the desk and started in on his figuring again. In a few seconds he was lost in his work. Less than five minutes later he felt eyes boring into his back. He turned his head. Recollection of this scene from the other side of the glass four hours before caused him to grin.

"Hey! You're me!" he saw himself say. He nodded delightedly. The look of ludicrous astonishment on his face as it had been then, and as it now appeared through the glass, was too much. He doubled up in unrestrained laughter.

When he regained control of himself his figure through the glass was gone. Hastily reviewing his movements he remembered he had entered his office and spent a lot of time at his desk.

"Here's where I came in," he chuckled. "Now to get busy on my plan." He went into the lab . . .

* * *

"OOH," Mary Saunders groaned.

She opened her eyes and looked up into the worried face of her husband. In a moment she realized she was in a speeding taxi.

"What happened?" she groaned, touching her forehead tenderly. "Oh!" She sat up quickly, an angry light in her eyes. "I remember now. It's all your fault, George Saunders!" She moved away from him to the other end of the seat.

"My fault!" George exclaimed. "I worry about you all morning on account of a premonition—I warn you not to use the vacuum, and because you do, and get hurt just like in the premonition, it's MY fault!"

"Yes, it is," Mary said firmly. "If you hadn't called up so much I wouldn't have vacuumed until this afternoon. Maybe I'd even have waited and let you do it before the company came tonight. But when I saw you on the porch peeking in at me instead of being at work—and after all those phone calls, it was your fault that I fell over the vacuum hose. Turn this taxi around and take me back home."

"But—" George protested, then gave up. "Oh, all right. Back home, driver."

Mary, still angry, got out of the cab as soon as it stopped. She was waiting with an expression of patient martyrdom, leaning against the front door, when George got through paying the driver and came up the walk.

Automatically his eyes turned to the

window the glass company had installed that morning—the root, he was now convinced, of all the trouble. He caught his breath. Through the window he saw Mary in the living room, furiously vacuuming, the bruise on her forehead a large angry welt.

He compressed his lips silently. His eyes wavered from Mary leaning against the door to Mary in the living room, vacuuming. Without saying a word he took out his keys and unlocked the door. Pushing it open he marched through the house and down to the basement.

He slipped out the side door from the basement with the hammer under his coat in case Mary saw him. In front again, he stole softly up the steps to the porch, his eyes glaring at the offending window.

Inside, through the glass, he saw his wife facing the kitchen, her lips moving angrily. Suddenly he saw himself come into view from the kitchen, a pleading look on his face.

He waited for no more. Raising the hammer, he brought it against the glass with shattering force. A million spider-web lines spread out from the point of impact . . .

* * *

“WHAT’D he want, boss?” the poker-faced man asked, looking after the man crossing the empty roulette room toward one of the deserted tables.

“Says he’s Professor Blackstone,” the heavy-set owner of the gambling casino answered. “Think’s he’s got a system to beat the wheel and wanted to study it before anyone comes in. I told him it’d be four hours yet before we start up for the evening—and to go ahead and figure out his system.”

The two laughed silently as the

fragile figure of the professor stopped beside one of the tables, placed a pair of thick-lensed spectacles on his nose, took out a pad and pencil, and concentrated his gaze on the luxuriously built wheel.

They watched briefly while the professor started jotting down figures in the notepad, then turned away, amused at this sucker who was eager to beat the wheel with his “system.”

Professor Blackstone had approached the roulette table a little doubtfully. It was so utterly deserted, and he was not quite used to the idea of being able to see into the future.

When he put on the spectacles containing lenses cut from the large pane of glass in his office and looked through them, the table was no longer deserted, however. The wheel was spinning beautifully. A marble was dancing around on it. When it slowed down the marble came to rest. He wrote the number it stopped at in the upper left hand corner of the first sheet. Lifting his glasses slightly he looked at his watch. It said five o’clock. Dropping his glasses into place he looked at his watch again and saw that it said three minutes after nine. He wrote the time after the number.

The wheel spun again. Again he wrote the number down, this time just under the first one. After he had done this several times he became more sure of himself. He took to glancing about him, noting the people around the table with interest.

After twenty minutes had gone by he located himself standing at one end of the table, a large stack of chips in front of himself, and people crowding around him trying to get a glimpse into the notebook he glanced at surreptitiously each time before placing his bet.

He was enjoying it now—watching what would take place four hours in the

future, peering under his glasses to jot the number the ball stopped at on his notepad.

He saw himself finally gather up his chips and start toward the cashier's window. He saw something else. A slim, pokerfaced man skillfully lifted the notebook from his pocket as he pushed through the crowd. This thief joined three other men and the four of them came to the roulette table and started making bets.

"Aha!" he muttered. "I'll fix those men."

He faithfully wrote the numbers as they came up until he had six correct ones. The next time he deliberately wrote an incorrect number. Then three correct ones, a false one, a correct one, and five straight false numbers.

"That should teach them!" he said. He looked around. He couldn't find himself anywhere in sight. "I must have left," he thought. He let his eyes dwell in derision on the backs of the four crooks who were heading toward the exit, then took off his glasses.

At once the gambling room was its deserted, brooding self again. He looked around while he slipped his glasses in his breast pocket. He glanced at his watch and saw it would be a little better than an hour yet before play started.

"I'll have time for something to eat," he decided.

"Got your system figured out?" a voice sounded behind him. He turned his head hastily. It was the manager of the casino who had given him permission to study the roulette game.

"I think so," he answered in a positively authoritative voice. "Mathematics, you know. But I'll be easy on you. I'll stop when I've won a hundred thousand. I'm not really interested in gambling—just in proving my system."

"I suppose you have enough with you

to weather any—ah—misses in your calculations?" the manager asked.

"Two thousand dollars," the professor said. "But I really don't expect to have to use more than a couple of hundred of it."

He smiled inwardly at the amused tolerance on the gambling proprietor's face.

THE evening went just as he had seen it go. There were, of course, many incidentals that he hadn't seen through the spectacles. It was vastly different to see himself standing where he would be in the future and see himself go through motions, and to actually be living that future consciously.

He found several problems coming up that he had missed. As soon as he had won several thousands of dollars he found to his annoyance that other players were placing their bets with his. He stopped this eventually by making a false bet that broke several of them and taught the others to be wary of him and his system.

Eventually he had his hundred thousand in chips in front of him and noted with satisfaction that it was exactly the time he had seen himself quit.

Putting his notebook carelessly in his side pocket with an inward chuckle, he gathered up his chips and pushed through the admiringly respectful crowd toward the cashier's window.

When he got there and unloaded his armful of chips he felt for his notebook and found it gone, but so skillfully had it been done that he hadn't felt it leave his pocket, even though he had tried to detect it.

"Would you like cash or a check, sir?" the cashier asked.

"A check, if you please," he answered. "Also an envelope." He filled out the name and address of his bank on the envelope while he waited for the

check. When it was handed out through the cashier's window he endorsed it and added, "for deposit only in the First National Bank," and slipped it in the envelope.

With one last look around he made his departure, dropping the envelope in the mailbox at the entrance to the gambling casino. His skillful fingers flipped down the mailbox cover and slipped the envelope containing the check into the box so swiftly that the whole process didn't cause him to miss his stride. The eyes that followed his departure from inside the casino missed the mailing of the envelope.

Humming contentedly, the professor found his car in the parking lot and slid in behind the wheel, thinking pleasantly of the new car he would buy as soon as that check cleared with the bank.

He chuckled as his car wheeled out onto the highway for the five mile drive to his office, thinking of the four crooks and their certain losses if they followed the number sequence he had written in his note pad.

As the landscape slipped smoothly by, his mind turned to experiments he planned on performing with the mysterious glass. There were big questions yet to be answered.

Did the glass, in some mysterious way, jump across time and view the only reachable future point? Or would, say, two thicknesses of the glass bring the future eight hours distant to the present, and three thicknesses twelve hours?

Would melting down the glass and getting thinner sheets make possible viewing a closer future, like—say—fifteen minutes away?

He had been too interested in that first experiment, the making of a hundred thousand dollars, to consider these more important questions before. Now

they filled his mind.

HE TURNED the car onto the street leading to his laboratory. It was only as he was pulling to the curb to park that he finally became aware of the car that had followed him all the way from the gambling casino.

He had been subconsciously aware of it all the time, he now knew, but only when it followed him into the deserted street and showed signs of stopping did he finally realize consciously that it was not just another motorist.

"Those four crooks!" he thought, angry at himself for not realizing they would be out for revenge when they realized he had tricked them with phony numbers. "But no—they wouldn't have had time to realize that yet when he left. That hundred thousand!"

Self disgust at his stupidity flooded his mind as he ran quickly from the car to the building entrance. Of course, the crooks wouldn't sit idly by and watch him coolly walk out with a hundred thousand! That was too much money to forget about!

His fingers were starting to sweat as he fumbled in his trousers for the key ring. He unlocked the street door and let himself into the deserted building. With mounting panic he locked the door again on the inside.

By the time he reached the first landing he heard the gentle rattling as the men who had followed him tried that door and found it locked.

His knees were weak as he climbed upward to his lab and office. He was already regretting not having stayed in the car and gone to the nearest police station and asked for help.

"They didn't see me mail that check," he panted. "They think I have the cash on me, and will kill me to get it."

The silence of the dark, empty staircase filled him with terror. He fumbled at the lock to his door, finally getting it unlocked.

Inside, he locked the door again and flooded the room with light. The familiar surroundings calmed him. He stood there, with his back against the door, trying frantically to figure out something.

"With a hundred thousand dollars at stake they'll get in somehow—and quickly," he thought. "I should call the police, but will they have time to get here?"

He crossed to the door to his office and went inside. In a moment he had the police on the phone, and told them to come quickly. He told them a man had been killed and others were in danger, just to make sure they wouldn't delay.

Then he went back into the lab. Maybe, he thought, there might be something on the shelves that could be mixed into a poison gas or an explosive or something to use as a weapon.

He paused near one of the shelves on the far side of the lab. A movement from the office caught his eye. He turned and looked through the glass. Down in one corner of the glass were two small holes where he had cut out the glass for his spectacles, but he didn't notice that now.

There were men in his office—and he realized that those men would not actually be there for four hours yet.

His feet moved slowly, unconsciously, as he approached the window to see better what was going on inside. There were men with the uniforms of policemen, and grim-faced men in civilian clothes.

They seemed intent on something just out of the range of his vision near the floor. He went up to the window and looked in, then swayed dizzily, his

features freezing into an expression of indescribable unbelief and horror—for there, lying on the floor, was his body, riddled by bullets.

For one eternal moment the scene tore into his brain, and with it the realization that what he was seeing was the UNCHANGEABLE future. Then his mind awoke, berserk with fear and the maddening hopelessness of averting of that which WILL ALREADY HAVE HAPPENED SHORTLY.

A two-gallon jar of distilled water rested on one of the tables. Professor Blackstone picked it up and hurled it violently at the innocently gleaming surface of the glass window. It broke and sent water cascading to the floor, but it cracked the window.

Moaning in a low, sobbing voice he found a hammer in a drawer and went to the inoffensive window and completed the job, pounding until the entire window was white in color from the millions of spiderweb cracks that covered it.

He stopped only when he heard the glass of the hall door break.

"No!" he protested wildly. "No!" He backed into his office as the grim, menacing men advanced with slow determination toward him . . .

"THAT'S aggravating!" the tall, dark-complexioned man said, tossing the letter on the desk angrily. "Nothing but criminal carelessness!"

He paced up and down on the expensive oriental rug, his long slim fingers knotted together behind him, his bearded face smouldering in anger.

"Inexcusable!" he said after several turns about the room. "I'll have some other company make them after this."

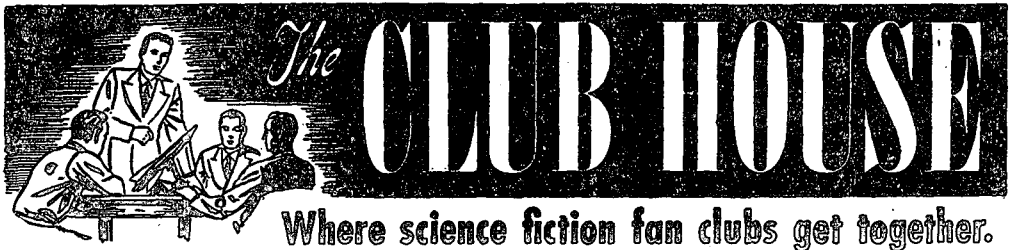
The letter that had caused his anger lay face up on the desk. Its letterhead was that of a nationally known glass

factory. Under the "Dear Sir": it began:

"We regret to inform you that we have been unable to locate that special batch of glass you sent us. As nearly as we can determine, some workman, not realizing what it was or that it was not ordinary glass, must have used it on some other, and unknown job. We are still looking, and if we find where

it went we will salvage it and use it as it was supposed to have been used. Meanwhile, if you have more of your special glass and care to continue doing business with us, we will be happy to be of service to you as always."

Above the "Dear Sir": was the address of the letter. It was addressed simply to "The Crystal Ball Supply Company, Madras, India."



Conducted by ROG PHILLIPS

LAST month I said I would try to show the parallels between what is known today as stf fandom and the two previous waves which can be roughly called the scientific wave and the inventing wave. They, and other waves in human progress, have certain common characteristics, and follow a certain pattern. Gaining an understanding of those characteristics and common properties of growth will enable us to understand more of what stf fandom actually is and what its future is. I described those common characteristics partially, but will try to crystallize them into a definite pattern now.

This pattern isn't too clear cut. Every statement I make will have its exceptions and will be a statement of trend rather than sudden surge. It will be a pattern something like that of waves in the ocean beating against the shore—a series of mild waves breaking quietly, a large, surging wave that carries far up onto the beach, and a quiet flattening out. To say, "This is the wave and that is the ocean," is almost an impossibility except for the unmistakable part of the wave. It will be the same with this picture.

Oswald Spengler said that every civilization had its characteristic pattern which could be discerned in its mathematics, its literature, its architecture, its philosophy, and its religion. He said, further, that a civilization is born, grows up, and finally dies. Its substance then goes back into the soil and enters the new growth.

In ancient Greece Euclidean geometry was the "mathematic." With the death of the Greek civilization the "mathematic" went back into the soil, to emerge in the middle ages as the humus

that gave nourishment to the then growing Western Civilization. That picture of history given by Spengler immediately gives rise to speculation on how a civilization is "born," if it grows up, matures, and eventually dies. And it is in that process of birth that we must search for the counterparts of modern stf fandom, and for the meaning and the future of science fiction and stf fandom.

There is a certain type of person to whom conventional thought has little appeal. If a thing is an accepted idea he often doesn't even care to become acquainted with it. At first thought that might seem crackpottish, but it is the same in motivation as the person who turns his back on cities and farms and chooses the rough life of an explorer. It is adventure.

Take Galileo. He may not even have bothered to learn the accepted ideas on the universe in his day. Whether he did or not, he got hold of something that satisfied his urge to be special. To him his life was something important—something to make the most of in some way different than that of the local butcher and baker who were content to earn a living and fit in with the rest of the community. He found that something.

You find men like him in all ages. They are either the genius who absorbs the stable pattern of his times and takes a bold step forward, or they are the adventurer who turns his back on the stable pattern and strikes out into new territory. This type of person is, variously, the leader, the pioneer, the fanatic. We will call him the INDIVIDUALIST.

About him gather a certain class which has

the same spirit but not the same creative ability. They help, elaborate, and guide. To a great extent they inspire. They are what might most accurately be called the DISCIPLES. Their motives vary from a selfish hope that by associating with the Great they can reflect Greatness, to a fanatical belief in the rightness of their leader and an equally fanatical determination to convince people of it.

Under these are the followers—the believers. They, as a group, form what is called a SCHOOL OF THOUGHT, or a MOVEMENT. They may be the disciples of the disciples, or they may be part-time disciples of the leader.

They form the steady part of the AUDIENCE, and the audience is the part of the general public that, with varying degrees of interest, is aware of the existence of the thing.

Comparing this to the wave in the ocean, the crest of the wave is the INDIVIDUALIST; the swell, or body of the wave is the DISCIPLES; and the broad, somewhat undifferentiated base of the wave is the SCHOOL OF THOUGHT, or MOVEMENT. Under that, of course, is the ocean bulk, with the audience immediately under, and the rest of humanity spread out below.

Now, it isn't the individualist as a person that forms the crest of the wave. It is his activity, or the idea he gave out. And the individualist might not even be a specific person! The experimental method upon which experimental science is based cannot be said to have been discovered by any single person. The idea of inventing things was not discovered by a specific, known person. Those ideas had existed for hundreds of years and thousands of years before, almost unexplainably, they gained popularity so that in almost any neighborhood you could find some kid or adult kid "wasting his time" in an almost fanatical devotion to them.

The experimental determination of the relationship between the length and tension on a string or wire and the frequency of its vibration was accomplished in ancient Greece. There are dozens of experimentally determined conclusions that were made long before Mendel experimented with garden peas, Hertz experimented with spark gaps, Volta experimented with electricity, Galileo experimented with lenses, etc.

Experiment was a common thing at the dawn of history. Farming, boatbuilding, war, government, and many other fields paid attention to it. Experiment gives experience. But, experiment as the means of studying and exploring nature without any assessment of its practical value was an idea that formed a wave in the ocean of human thought. Its first emergence from the surface of the ocean can almost be given a specific date; and its breaking on the shore, to sink back into the ocean as a stable part of it, can be definitely pinned to the year 1901.

That is why I have likened these things to waves in the ocean. They rise from the coalescing

of thousands of little wavelets into a broad, slowly moving crest—the popularization of some idea, like experimenting or inventing or dramatized speculation about scientific possibilities, until somebody in every neighborhood is doing it. Then suddenly a new element invades the field—the SYSTEMATIZERS. The atmosphere changes abruptly. The buckaneering spirit flees.

Instead of "Hey! Listen to this!" you hear quiet whispers in the dignified silence; "In 1853 J. Doakes wrote quote, quote closed. It is definitely known he had not read quote, quote closed, advanced by B. Bloke in 1839, though (see Dr. D's History of it) there is an unauthenticated report that—etc." And, "J. Doakes, in 1853 discovered that blah blah. It was independently discovered by B. Bloke in 1839, but it is to J. Doakes that we owe the technique and the symbology employed until recently." The gold rush to that sort of thing began, in science, to crystallize in 1901. It was as abrupt as the breaking of a wave against a sandy beach. To be sure, there had been a lot of that done in science before that, but not quite in the same spirit or the same way. Before that it had been done in a General Science way. Now, suddenly, instead of just science, there was this science and that science—well ordered and with its growing field of specialists.

Invention, starting later by its very dependence on the preceding wave, seems to have become definitely a wave in 1848. It depended on tools and on scientific principles, and rose so quickly that the story of the patent office clerk quitting because he thought pretty soon everything would be invented, so his job had no future, is a classic.

Where the wave of science broke and settled into the colleges, the wave of invention broke and settled into the modern industrial empire. Where the wave of undifferentiated science broke up into specialized branches such as psychology, organic chemistry, inorganic chemistry, botany, archeology, etc., the wave of undifferentiated inventing broke up into automobiles, radionics, farm equipment, power generation and distribution, toys, kitchen gadgets, conveniences, automatic venders, office equipment, etc. It entered the deep ocean of everyday life. It took the airplane and made aviation. It took the television idea and created modern television deliberately. It took the calculations for an atom bomb and used the crystallized pattern to make them.

Today the process of consolidation is well under way, which, if allowed to go its natural way, will keep on bringing science and invention and the education of potential scientists and inventors closer and closer together.

Today a new scientific principle may be discovered. It will most probably be discovered by a group of men rather than a single individual working alone, but however it is discovered, as soon as it is verified its potentialities will immediately be explored. If they show promise then

big business will spend any sum necessary to develop them to the point where they can bring in a profit. But that is the rare thing—the off chance.

Refinement is the main pursuit of modern science and invention. Refinement of teaching method. Refinement of research technique. Refinement of methods and refinement of data.

The two succeeding waves, science, and invention, have broken against the shore and their waters have sunken into the sea of human living and civilization. But now a third wave has risen out of the anonymity of the expressionless surface of the sea of thought and, in an unbroken, moving wall is coming in toward shore.

That wall of water, that wave, is science fiction. How will it break? What is it? Its human components, the authors and the fans, are the counterparts of the names out of the past of science and invention—Galileo, Cardan, Newton, Morse, Fulton, Hertz, Marconi, Ford, etc. There are analogous waves arising and breaking against the shore all the time; but we are concerned only with those whose aim and activity conforms to man's eternal questioning about the nature of reality and how he can understand it and shape its activities to his own ends.

Analogous waves in the human ocean, that rise, speed majestically toward the shore in free advance, and then break, to sink into the bulk of civilization, are pre-catholic Christianity that broke; to become Catholicism; Protestantism that broke to become modern democratic worship; hereditary government by kings, which broke to become constitutional government; skilled trades Guilds, which broke to become unions; private schools, which broke to become the universal system of public education: but none of these are concerned with man's quest for a mastery of the mysterious.

I believe science fiction to be such a wave rather than merely a type of literature. I believe its present state to be analogous to the state of science in the seventeenth and eighteenth centuries, and to the state of invention from 1848 to 1918 or 1923.

In next month's CLUB HOUSE I will try to show how science fiction arose out of the ocean of thought to become a clearly differentiated wave. I will try to show what I think is going to be its future, and how and when it will break against the shore of crystallized recognition of it as a unique force, and what I think will happen to it under the hands of the SYSTEMATIZERS.

* * *

The CLUB HOUSE cannot be used for advertising the wares of book publishers. That is why I can't say anything about the books, WITHOUT SORCERY, by Theodore Sturgeon, and LEST DARKNESS FALL, by L. Sprague de Camp, that PRIME PRESS, Box 2019, Middle City Sta., Phila. 3, Pa. has published and is selling for three bucks each. They may be nice books—undoubt-

edly are, since Ray Bradbury says in his introduction to Sturgeon's book, "Mr. Sturgeon is a bright troll under a bridge, with whisking pen and white paper . . . whose viscera, at midnight, cast a most incredible glow upon all nearby objects." But still, I can't include anything like that in the CLUB HOUSE, because it would be advertising. Advertising should be paid for.

And I can't use the CLUB HOUSE for a letter column. So, letters like this:
Dear Mr. Phillips,

This letter has three purposes. First of all, there's a little problem about a fanzine—one I want to start and can't because I already have my own club magazine. I have a job there that takes up most of my time. Anyway, I can't seem to drown the fanzine urge, so here's a little scheme I thought up. I have a pretty good share of addresses, places where wholesale paper, etc., are available, the best ways of getting photos done, etc. I've been through the mill with my own mag. Now if anybody has access to a press and type and would be willing to put in some work, we could get up a pretty good mag. Oh yes! I'm good for a few other things besides addresses. I edit, think up advertising schemes, and any odd job such a venture requires. I can't guarantee how good I am, but I seem to hold my present list of readers. How about it, anyone game to try?

And here's a wink of my eye to Marion Zimmer. I hope this is enough for V. S. membership.

The third is simply a request for more stories from my favorite sf author, one Rog Phillips.

Sincerely,

(Miss) Margaret Ann Rose
World Wide Playmate Club
Headquarters, 405 W. 18th
Hutchinson, Kansas.

should be sent to the editors for the readers' column.

Also, if you like the way the CLUB HOUSE is going, it would be better to write the editors than me, and tell them about it; and if you don't like the way I'm doing in it, write me. That way, your praise will keep the column in existence, and your criticism will get careful consideration by the guy that it's aimed at. Which brings us to the fanzines.

* * *

CENSORED: Fall '48; 15c; Fred Hurter Jr., published quarterly, (barring 6 year lapses). Address subscriptions to the Hurter Beer Fund at 79 Hudson Ave., Mt. Royal, Montreal 16, Canada. It's a wonderful fanzine, as the following letter published in it testifies:

Dere Freddy,

Got your last issue in the male sex yeres aggo, and wood have wrotten you then, but I figgered I shoold lern to speel 1st. Now that I can, I jest want to till you that CNESSNORED is the best fanzine I have evre red and the onely wun I have evre understould. I'm glad sumbuddy rights

for the intelligensa. I cant make hed nor tale of the mureonic ifforts put out by some fen.

Kepe up the gould wirke. I am inclusing \$350 for a lafftime subs. to CENESSORRED. My teching job at the univarsity payes quit well, thats how I can aFord IT. (aFord it. . . Thats a car, sun) Ha ha.—Hick Beery.

The printing job on CENSORED is professional. From that angle alone each copy is worth 50c, not 15c! And the contents—I wish I could print the whole zine in this column. In fact, it would be a distinct improvement over the tripe I write up at the beginning of the thing. There are two full length 600 word novels, a one part serial, five feature articles, art work, and poetry, and reader departments. There's a puzzle dept. that is really something!

SCIENTIFANTASY: Vol. 1, no. 1; fall, '48; 15c, 50c yr.; Bill Kroll and John Grossman, 1031 W. 18th St., Des Moines, Iowa, is one of those things which are in every way a real jewel of a fanzine. It's pocket size, made by photo offset, which reduces a full typewritten sheet down to small size. The artwork is out of this world in more ways than one! And such stellar names as David H. Keller, Joe Kennedy, K. Martin Carlson, Arthur H. Rapp, and Tom Carter grace the contents page, with artists, Ralph Rayburn Phillips, Howard Miller, and the two editors making this high in art quality.

The following letter accompanied the zine, and I think it well worth giving here in toto, so here it is:

December 8, 1948.

Dear Rog:—

Enclosed under separate cover is vol. 1, no. 1 of the latest in photo-offset zines, SCIENTIFANTASY. It would have been sent quite a bit sooner than this, as the rest of the mailing was sent out the first of November, but I wanted to write you a letter to go along with it. Due to many various circumstances and a certain amount of forgetfulness, I am just now finally getting around to it—please forgive me. No doubt we've missed the latest deadline for "The Clubhouse" because of my tardiness.

On to more pleasant subjects—that of our brainchild, Stfsy, for instance. For one thing, Bill Kroll and I have worked long and hard on it over a period of six months, when the idea or ambition took form. The reason for taking so long on it resulted from the usual difficulties both zine and editors must face—securing some decent material, making decisions on format, layout, departments, etc., and roping in some suckers—pardon me—subscribers. Particularly subscribers. Fans are loath to send jack to help support something they haven't seen first—smart, ain't they? We had to pay for the larger part of this first issue, and even at this late writing, it looks like we'll have to do the same for number two. 'Course in this fanzine publishing business, certainly not everything can be all orchids and no

skunk-cabbage, so we're not complaining. Besides, all the ego-boo and such you usually receive from publishing your own zine is worth twice the dough you sink into it. Good experience, too.

Enuff of this musing, and more cold facts. Stfsy is to have a good abundance of artwork in every issue, and accordingly, art is therefore to be our main attraction. You may quote me. Do not, however, be lead to believe that as far as good material is concerned, we are inclined to let it go to hell—far from it. Bill, as editor is trying to get the very best stuff he can lay his mitts on, so be looking forward to good reading matter in future issues as well as pleasing artwork. And now that I'm back on the subject of artwork, No. 2 will have a lot more different artists illustrating it than did No. 1. Bill and I practically illustrated it ourselves, y'know. In fact, I guess we DID. Anyway, we are planning to have Bruce Berry, Howard Miller, Russ Manning, Bill Kroll, Jon Arfstrom, Lin Carter, Miles Eaton, John Cockcroft, Bob Dougherty, Jack Gaughan, Me, and a few others we're not sure of to have stuff in No. 2. Promises to be a great issue.

Well, I've got a pile of other letters to answer, so I'll have to cut this short. Er—if you happen to have an article or short story laying around that might be suitable for Stfsy, by all means send it to us—we would like to have it. Thanx for your time, and we'll be looking forward to the review. Write us if you find the time.

BemBye John.

* * *

FANTASY TIMES: 10c; twice a month, James V. Taurasi, 101-02 Northern Blvd., Corona, N. Y. The only fanzine seriously engaged in obtaining and publishing news about science fiction publishing and stf subjects while it is still news instead of history. Those are my words, and not Jimmy's, and F-T lives up to them in every way. I won't steal their stuff by printing it here. However, on page 8 is a column called "The Fan Mag Collector" I'll reproduce to help out. (1) James V. Taurasi wants "Dream Quest," No. 1, "Fantasy Times," Vol. 1, No. 3, "The Burroughs Bulletin," Nos. 3 & 5. (2) Ray H. Zorn, Troy Grove, Illinois, wants "Lethe," No. 7, "Atres Artes, No. 3, "Spaceways," Oct. '41, "The Rainbow," "Scientifiction (British pub.), June '37, "Science Fiction Critic," July '37. (3) Bob Tucker, Box 260, Bloomington, Ill., wants "Fantasy-Times" for Aug. '48.

FANTASY-TIMES British edition: Oct. '48; for Britishers only. Two pages containing "Torcon's Second Day," by Will Sykora, "The Cosmic Reporter," by Lane Stannard, and "Seven Years," an editorial.

SPACEWARP: 15c, 9/\$1.00; Arthur H. Rapp, 2120 Bay St., Saginaw, Mich., Dec. '48. Cover by Lester Fried, and interior art by Wm. Rotsler this time. There's a very entertaining story in this issue by Marion Zimmer, 111 Lancaster St., Albany, N. Y., who is undoubtedly No. 1 feminine

fan. The story is titled "Outpost." The second story is "Dark Wisdom," by William James. Four articles, most outstanding of which is Arthur Cox's "The Romance of Alchemy" in which he shows how alchemists cloaked their work in esoteric language to hide it from the common eye.

Of special interest to service men is the announcement by Ben Singer that he is bringing out a fanzine for service men, which will be called UNIFEN, and will be free to servicemen. Write to Art Rapp for information if you are interested.

"File Thirteen," by Redd Boggs, asks, "Is science fiction getting anywhere?" Redd gives the answer as no. His argument could be used to prove education isn't getting anywhere, by taking the statistics for the fourth grade, and showing that the number of people in the fourth grade has remained fairly stable for the last ten years, and so people aren't taking to education. But, aside from his neglecting the turnover in the stf reading public, his arguments are largely right. Stf is holding its ground, but not gaining much in popularity as a class of fiction, though lately some of it has been appearing in non-stf slick-zines. I would say that twelve million people know what science fiction is now, where ten years ago less than a million did. That's something!

FANTASY REVIEW: A journal for readers, writers, and collectors of imaginative fiction, bi-monthly, published in Great Britain, 115 Wanstead Park Road, Ilford, Essex; 25c, \$1.50/yr. Featured this month is a translation of an article published in Russia which "proves" that stf is a capitalist-fascist propaganda tool of Wall St. The thing that makes that sort of stuff not funny is the obvious fact that if, by some quirk of fate, "Der Refolution" succeeds, all our books will be destroyed and these Soviet "truths" will become the historical "facts" upon which future generations must build.

The thirty-two pages of this printed zine contain many well written and interesting articles, besides ads. It is, in everything except subject matter, a professional magazine **CATALYST**: published occasionally by Thomas Riley Fowler and Clifton Bennett, Apartado 11, Tecate, B. C., Mexico. It says "One hundred copies have been made, and anybody energetic enough to write may have one as long as they last." A very well written and worthwhile article in the guise of fiction from the future is titled "Was Manhattan Necessary?" Another story is titled, "Leprechauns Have Eyebrows." A half page article on how to wrestle with a mimeograph gives good pointers for the fan publisher.

If you write these boys for a copy of their zine, take the trouble to tell them about yourself and things. They are in the middle of some Mexican mountains and would welcome something interesting.

* * *

That's all for this time. As I write, it is the last day of 1948. Tomorrow will be 1949, and it would be interesting to know what statements will appear in the history books of the future with the tag, 1949, tied to them.

Arthur H. Rapp of **SPACEWARP**, donning the robe of Nostradamus, predicts:

Two coins, a grating, red and blue
Shall rock the mighty through and through;
When pyramids hold two great fen,
A revelation from a pen.

The first two lines could mean war or at least continued trouble with Russia. The third line could mean two well known fans will die, and the comma after that could mean the revelation from a pen would follow, but not necessarily be written by those two. Fascinating!

—ROG PHILLIPS

FLUOROCARBONS

By A. LEE

★
A NEW series of chemical compounds offers a great deal of promise in many fields. Two of the strangest elements—good old stable carbon—and flaringly active fluorine have been brought together into a combination that promises much for the future.

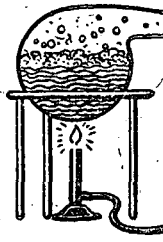
In a special electric cell, in the presence of a nickel catalyst, hydrogen fluoride and various organic compounds containing carbon are brought together and the result is a new compound known as a fluorocarbon which may take any one of many different forms.

The fluorocarbon can be an electrical insulating material of very fine properties, tough, and oil resistant and capable of withstanding high volt-

ages. Or a new oil, a fluorocarbon oil may be created. This oil has the wonderful property of never "wearing out" or burning up. It can be used in engines at extremely high temperatures.

Plastics, wall paints, surfacing materials—all may be made of the new fluorocarbons and they will be extremely useful because they are so resistant to chemical action. In the field of textiles, fluorocarbons will play their part.

A tremendously corrosive chemical compound, uranium hexafluoride, used in atomic research, can only be stored in containers made of the fluorocarbon compounds. In fact, it was the atomic bomb work that accelerated the work on these miraculous chemicals.



SCIENTIFIC ODDITIES

By LYNN STANDISH

A TOUCHING anecdote involves the first of the great theoretical-experimental physicists, Galileo Galilei. This man was one of the greatest who ever lived, for he established the science of mechanics and gave it its initial direction. All other physics, no matter how abstruse ultimately resolves itself down into a mechanical treatment, as established by Galileo.

A man of the period, one Fra Paolo Sarpi, recognized Galileo's great contributions to mankind, when he said: "To give us the science of motion, God and Nature have joined hands and created the intellect of Galileo."

This tribute is not exaggerated. Galileo, whose eyes, both mental and physical, had peered into the depths of the universe, was played a cruel trick by nature—he went blind while still a religious prisoner. Nevertheless, his keen mind never ceased functioning. He still worked using his assistants as proxy eyes.

The famous English poet, John Milton, visited Italy and made the acquaintance of Galileo. How fortunate for him that he saw this man's fortitude! For Milton eventually went blind himself. What happened to him and what he had seen in Galileo undoubtedly strongly influenced him when he wrote his famous poem "On His Blindness."

AN INVENTOR has proffered the suggestion that an ordinary circular slide rule be motorized. And it seems that this isn't a bad idea for a new type of calculating machine. A slide rule is an extremely versatile instrument, capable of being used for a host of different types of calculations ranging from simple multiplication to elaborate root extractions—all done with surprising accuracy.

Furthermore electro-servo-mechanisms have been developed to the point where they're very reliable. These coupled with photo-cells or similar detecting apparatus could easily be used to direct the rotation of a slide rule. Before the operator there could appear a console or desk arrangement. Here, by manipulating buttons, and reading dials or by reading the rule directly, the conventional operations could be performed speedily.

To top it off, the slide rule could be made very large in accordance with the rule which states that the larger the scale the more accurate it

would be. This undertaking might not be too ambitious a project for an amateur imbued with skill and determination. Let us hope that some enterprising technician will set his hand to a task like this. It may mean another scientific advance—as so often happens when the tyro really goes to work—witness radio and astronomy!

THE problem of transmitting messages has recently been taken over by physicists and given a thorough treatment in accordance with the new tendency to analyze hoary old ideas and to view them through new spectacles.

"Transmitting intelligence" refers almost universally today, to electrical communication. It is interesting to consider the capabilities of communications ranging from the simple, single-wire telegraph to the modern radio transmitter. It will be noted that the simplest message that can be transmitted through any of these media, is a single electrical pulse. Now this pulse can tell little of itself but when combined in a series of pulses we have the common telegraph whose limitation, of course, is the understanding and separation of the individual impulses. It is a relatively slow method.

The telephone speeds things up somewhat as does the teletypewriter, but both leave a great deal to be wanted. Recently, however, a new system of communication has been devised which may transmit, eventually, as many as a million words per minute. As fantastic as this may sound, it is well within attainment due to a number of new inventions.

This magazine has frequently commented on the way applied science has jumped ahead by leaps and bounds and has pointed out how advances in one field of science aid other fields.

Certain developments in high-speed photography and television have revolutionized communications.

The new method of communication is known as ultrafax, and is essentially the transmission of pages of messages by means of television. In fact, an ordinary television transmitter may be used, obviously, to transmit messages simply by pointing the iconoscope at whatever is to be sent. However, this is an unnecessarily complicated way of doing things.

The scanning of a page of type can be done

much more efficiently with a simpler arrangement. The messages in the form of pages of words are photographed on small movie film. This movie film is then scanned by a rapidly moving spot of light developed in a cathode ray tube. The light-scanner passes through the film and impinges on a multiplier photo-tube. The electrical impulses are then used to modulate a conventional seven thousand megacycle television transmitter.

The messages are then broadcast and picked up by a receiver. The receiver in turn feeds the electrical impulses which represent the messages, to a projection cathode ray tube much like a television receiver tube, whose face is covered with movie motion picture film.

As fast as this film passes over the face of the tube it is automatically developed and dried ready to be read! It is at once apparent that the limitations on this method of image transmission are practically zero.

Before long it will be possible to order and receive the entire contents of the Library of Congress in a matter of minutes! And what makes the system potentially more useful is the fact that as television develops the same facilities for that art may be used for this new one. Perhaps some photographic attachment will be designed for conventional home TV receivers and everyone will receive his morning newspaper via the TV set. This is not too much to hope for. Remember, in the atomic age, nothing seems impossible!

THE famous Danish astronomer, Tycho Brahe, was not only distinguished for his scientific work. He was a virile man, a gay blade with the ladies, a favorite of the court. In a word, a man. It was said that he got involved in a duel over a lady and in the resulting sword-play he had the misfortune to lose his nose, which was replaced by a metal one.

However, Tycho Brahe had the good fortune to encounter the famous book, then little known, by Copernicus which explained the solar system on the basis of the sun as its center.

Immediately captivated by the idea, Tycho Brahe set out to provide data of unquestioned accuracy.

His famous observatory, Uraniborg, was equipped with every tool and instrument that the science of the time, plus all the necessary money, could provide. Extremely accurate setting circles, a large library, accurate angular measuring devices—all these things were there. When he finished his work he had provided more accurate figures on the motions of celestial objects than had ever been seen before.

Tycho Brahe was not a theorist. He was a practicing and diligent observer. He left his work to be utilized by other scientists. Yet his name belongs among the astronomical immortals, because theory without observation is of very little

use. It is not an exaggeration to call Tycho Brahe a pioneer in rocketry—for astronomical knowledge is necessary to that now growing science. In fact, any of the ancient scientists deserve such a classification.

NUMEROUS aids have been designed for the ship-wrecked sailor. The preparation of drinking water from sea-water by chemical treatment is one of the important ones. Equally important is a new method, perfected shortly after the war, of locating a ship or other vessel through the explosion of a bomb.

Scientists have long known that sea water makes an excellent carrier of sound. And sound travels at a much higher rate in water than in air. Where it goes 1100 feet per second in air, it will do five thousand feet per second in water. Using this knowledge coupled with the fact that deep ocean water refracts and reflects sound waves much as air does, the technicians have been able to work out a positive rescue system.

The lost ship simply drops a depth charge of only several pounds of explosive. This is timed and set to go off at a depth of about four thousand feet. When it goes off the sound waves travel underwater tremendous distances with great strength. Listening stations set up along various coast lines can easily pick up the sound.

Microphones embedded in the water, extremely sensitive detect the explosive. When two or three stations pick up the sound of the bomb going off, simple reference to a chart and a series of intersecting lines, locate the origin of the noise exactly. In this way the position of a ship can be pinpointed to within a mile.

You might wonder why radio calls might not be sent out. Of course they would be. But sometimes static and other interference is so great, especially over great distances, that the radio waves can't be detected. Sound, however, doesn't suffer this interference when traveling through dense water. Thus another help has been given the deep sea sailor.

ONE of the major problems of biological science is to determine the origin of Man. And it is a tough one. Yet one would gather from the numerous popularizations that have been written on the Theory of Evolution, that it had already been solved. This is far from the truth.

Ideas and theories have poured forth by the thousands—the fossil specimens from which these opinions have been drawn are miserably few. The Earth has been thoroughly explored for fossil remnants—with little success. Fossil specimens which can truly be considered the real ancestor of man, have been known in but two cases.

One was the famous "Java Man," called the Pithecanthropus, found in Java many years ago. It is a specimen composed of the skull, jaw-bone and thigh-bone of a man.

The other specimen is the Piltdown Man, found in Sussex, England and made up of a skull, jaw-bone and group of bones forming the nose parts. This specimen is also called the Eoanthropus.

The Java man was found in 1891, through the work of Eugene Dubois. He wrote up a description of this find in 1894. And when the specimens were examined by numerous experts, none could agree that the parts were all from the same ancient man. Even today the dispute rages and no one is satisfied. The same sort of fight exists where the Piltdown man is concerned. It is apparent then, that if the experts cannot agree on these remains, certainly a great deal more of information is needed. So until a lot more excavating is done, until hundreds and thousands of specimens are found, there can be no real agreement as to the origin of ancient man, other than that he evolved somewhere in ancient Asia.

The Heidelberg Man and the Peiping Man are just about as inconclusive. The Cro-Magnon man may have a stronger case because more specimens have been found. It is safe to say that we can predict that man has been here for at least a few hundred thousand years. But that's all.

NOW that the profound and disturbing effects of the atomic bomb have made themselves felt all over the world, a good deal of the old skepticism that always accompanied an atomic discussion, has vanished. As many a skeptic said, it sounds good, but show me! The Bomb has done away with that, but still it is interesting to see if there is any more direct proof of atoms and electrons than the usually vague ones.

In fact, after the discovery of the electron, how was the heavier nucleus' existence demonstrated? Was it just a matter of hypothesis?

Far from it. The famous physicist, Sir Ernest Rutherford, who did some of the most deceptively simple and beautiful work in the whole realm of atomic physics, showed very nicely why it was necessary to believe in or invent a nucleus.

Using a piece of radium as a source of alpha particles, which are really positively charged helium nuclei, Rutherford bombarded thin sheets of metal with the rays. For the most part the alpha particles penetrated between the interstices of the atoms like flies through a net. This was shown clearly by detecting the passed alpha particles on a fluorescent screen. But some of the particles did not go straight through. They came out at surprisingly varied angles.

It was apparent that the explanation could not be based upon the assumption that the heavy alpha particles were being deflected by electrons. They must be hitting something considerably more massive. What is more logical to assume that they were striking atomic nuclei. And such proved to be the case. Other experiments supplemented and confirmed this belief. We now know from

many sources that the atom is a dense nucleus surrounded by a cloud of electrons.

Will there ever be a chance to see a proton or an electron directly? The answer is an unqualified no. The reason for being so emphatic is simple. We cannot see something smaller than a half wave-length of visible light. An electron is much smaller than that. Ergo, we won't be able to see an electron.

MR. GEORGE GAMOW, in one of his recent books, gives an interesting discussion of the random printing press. If you will recall, Sir Arthur Eddington said that if all the monkeys in the world were to type at random on typewriters, if they typed long enough, eventually they would write all the books ever written or ever to be written! This is true, of course.

Dr. Gamow explains it a little more clearly.

He says, suppose we build a printing press, fed by endless rolls of paper, which would print line after line, selecting for each line different combinations of the letters of the alphabet, as well as the typographical symbols. Structurally, such a press would not be difficult to build. It would consist of different discs with all the letters and the symbols on the circumference. Geared together these discs would change in relation to each other.

Now, for the most part, the machine would print nonsense, sheer unintelligible nonsense. On the other hand, it would also print everything that has ever been printed. The works would come out disjointed and at random, and the scanning of its output would be impossible, but nevertheless the words and sentences would be there.

If we examined the paper coming off the machine we would discover the great books and novels, the technical works, the poems of the future for all that ever would be written would appear on our roll.

Of course, there is a catch to the whole thing. There would have to be. The problem naturally is the scanning. This would be incredibly difficult and so we never expect to see such a machine built.

It would be interesting, however, purely from a speculative, scientific standpoint, to build such a machine and to have it operate for a while in order to see just what we'd get. In fact, the more the idea is considered the more attractive it becomes. Perhaps, someday, someone will try this. Perhaps when electronics invades the printing field, someone will design an electronic duplicator of words which would be more capable of something like this than a mechanical gadget.

THE science and art of electronics is making greater and greater inroads into the machine shop and the machine tool plant. Old time machinists look askance at all the new gadgets that are coming into use and they shake their heads sadly and think of the good old

days when a micrometer was good enough for the finest work, and when the average machinist didn't know an electron tube from a steel tube.

But all this is changing. More and more the principles of electronics are being applied to machines—and so successfully that it is incredible. Usually this is in the field of control, but it also applies to the conventional tools of the machinist, too.

For example, the good old micrometer is being replaced in many places by a capacitive micrometer which is not only accurate but which can be applied to moving mechanisms, something that can't be done with the regular type.

A capacitive micrometer is essentially a condenser-oscillator arrangement. When material of a certain thickness is placed between the plates of the condenser, the frequency of the oscillator is altered and this fact appears in the form of a thickness reading on a graduated and calibrated meter. Where a single piece of metal is to be "miked" obviously the machine offers no advantage. But when a hundred thousand pieces of similar material have to be gauged, it is clear that this machine offers plenty of advantages. Or, if the metal is coming out of a rolling strip mill, the only way it can be measured is by some such device.

This magazine has already discussed the value of electronic control as applied to machines. This application ranges from simple speed-controllers for the electric motors to almost human apparatus for operating the machines automatically.

The list of applications is too long to go into in detail. It is only necessary to thumb through a catalog of manufacturer's machines to see the extent to which electronics is being added to the machine shop.

There is a new field open for radiomen and radio technicians. That is the servicing and maintenance of these mechanical electrical gadgets.

ALEC COPPEN, young medical student and president of Bristol University's Psychological Research Society, shuddered in his sleep in the gray hours just before dawn. His nightmare carried him from his room at the dormitory and bore him out across the campus into the country where he recognized in his dream a highway that was near an Army camp from which he had been discharged. A British army truck was moving down the highway and Coppen's dream was so vivid that he could read the regimental numbers and the unit number. An intersection was just ahead and a car was speeding toward it from a side road. Coppen could foresee the accident and tried to scream out a warning in his sleep. There was a terrific crash and the car rolled over and over. Two bodies were thrown across the highway, a man and a woman wearing a green coat. They lay motionless.

The truck was out of control till it crashed against a big tree. A big, red-headed corporal slid down from the cab and stared around in bewilderment. "In the car—there is a child trapped!" Coppen tried to cry out. At that point the scene faded and he awoke in his room at school. He was exhausted and perspiring. While the details were so vivid in his mind, he jotted them down. They would make an interesting class discussion for the Society that day.

As Coppen finished his notes, his room-mate awakened, and he tossed them to him to read. Then he turned on the radio and started dressing. As his room-mate was reading, the program was interrupted to give a special bulletin. "There has been a serious accident on the highway. Army truck and automobile collided, perhaps fatally injuring a man and a woman." The report continued with details that compared with the notes that Coppen had written down ten minutes earlier. A child had been rescued from the car, and even the regimental numbers on the truck tallied with Coppen's notes.

This dream-view of an accident caused a great deal of excitement among the students of psychological research, and when it was printed in one of the London newspapers, scientists hailed it as one of the most remarkable instances of precognition ever to be recorded.

WHEN one examines the Earth, he is inclined to think that it is an unchanging permanent structure subject to no forces, even though it may be occasionally lashed by puny hurricanes, tornadoes and storms. But that is a gross error. Like all natural and man-made things the surface of the Earth is undergoing a series of changes, which, though they appear negligible, in the long run, completely revamp the wrinkled skin of Old Mother Earth.

There are two major sets of activities or forces which grind away at the thin shell that surrounds our core of iron, and which tend to oppose each other. The first is erosion—the second is buckling or building forces. If only one or the other force was at work the Earth would be in a sad state, but Nature seems to strike a balance even here. Consider erosion first.

The wind, the temperature, the chemical attack of the atmosphere all combine to create a series of powerful forces which sweep all before them. If these forces were not countered by others they would soon shove off the land areas of the Earth right into the sea, or at least level the Earth until it was as smooth as a billiard ball. Water erosion alone would flatten the Earth into huge plains of barren flatness.

But the buckling or building forces come to the rescue. Volcanic in origin they cause upheavals of the Earth's crust which build mountain ranges, throw up huge barriers and in general change the entire surface of the planet. These forces are, in a way, constructive, for they pro-

vide a renewal "clause," so to speak, for the badly eroded land areas.

The earth-building forces revive and reconstruct the earth. Volcanoes, slip faults, geysers and hot springs, and earthquakes establish a strong counter-effect to the erosive forces. Evidence of this is seen everywhere.

It would seem, speculating a bit, that the whole world is governed by a built-in governor, a stabilized cycle, which acts to prevent any definite swing in any one direction. Thus erosion is there to level mountains, but faults are there to erect them. The chemical balance is skillfully preserved by lava-ejecting volcanoes all the while the atmosphere exerts its sometimes nefarious influence.

It is apparent, then, when we visualize the study of these phenomena that we can detect the hand of a super-human agency. The balance seems almost too finely set to be a matter of chance.

WE DISCUSS the following material happily. In fact we're enthusiastic about it. The current news magazines and newspapers have been carrying reports on the development of a rocket fuel which has sufficient power in a small volume to be a satisfactory propellant for a rocket to the moon. This is good news! All of the work apparently was done at Ohio State University.

Up until the news came out, all students of rocketry have been familiar with an important fact: modern rockets cannot be used in an attempt to reach the Moon for one reason—no fuel is powerful enough to supply the work necessary to take the rocket from the Earth to the Moon and still be small enough in volume to be carried in a reasonably sized rocket. Alcohol, gasoline, nitrogen compounds—all of them coupled with liquid oxygen are the present fuels. The V-2, for example, uses liquid oxygen and alcohol.

These fuelling agents suffer from the fact that no practical rocket can be built—practical in size, that is—using such fuels for a Moon attempt. Physicists and rocket engineers have known this for a long time. It has been no secret that the success of a Moon trip depended simply on finding a fuel suitable for the job.

Now comes this glorious news—but first, it should be explained. A fuel was known—it was, however, only good theoretically because it was such a dangerous material. *Liquid hydrogen*, when mixed with liquid oxygen and sprayed through a rocket engine, was imagined to be ideal. The trouble was it was impossible to use liquid hydrogen because it often exploded spontaneously, and the thought of mixing it with liquid oxygen was ridiculous.

None of the secret techniques have come out of the laboratory. But we do know that rocket engines have been designed using these powerful elements in a practical way.

A small rocket motor, about as big as a man's hand, has been built. This motor is sufficiently

powerful to drive a small airplane! The velocity of ejection of the gases from it is in the neighborhood of fifteen thousand miles per hour! Since much of the quality of the rocket depends on this value, it is at once clear that here is something to think about!

Regardless, another step has been taken in building the first Moon-rocket. It is no exaggeration to say positively that we are going to see the day when the rocket hits the Moon!

WHENEVER anyone looks at some new invention, he is tempted to say, "Why didn't I think of that? It looks so easy." And that's usually true. The great and moving inventions of our time are easy—easy in after-sight. But they give little indication of the laborious thought behind them!

In the world of science, as distinguished from pure invention the same condition exists. Many of the greatest ideas of our time are comparatively simple. But, oh what thought they took! When analyzed into its fundamentals, the Einstein theory, for example, is really simple. It is nothing more than an unusual way of looking at the relationship between space and time, and yet it took a genius to do that. No great machines are involved in Relativity; just brains.

In applied science the three-electrode radio tube is another case. It seems simple. It is simple, but again the spark that fired thought is the mystery. Why?

A great scientific invention which has received little discussion or consideration by the layman is the famous interferometer of Michelson. This tool, important in inspiring relativity by the way, is basically very simple. In essence it is a half-silvered mirror!

By a half-silvered mirror is meant a mirror which has a thin coating of silver deposited on it. Thus when a beam of light strikes it, half of the light goes through the mirror while the other half is reflected. The interferometer employs this mirror ingeniously.

The mirror is placed at a forty-five degree angle to an incident beam of light. Half the light penetrates the mirror while the remaining half is reflected at right angles to the original beam. Several other mirrors then re-unite these two beams, focusing them into the objective of a telescope. The two beams of light interact with each other in the classical pattern, causing alternate light and dark lines known commonly as interference lines or fringes. Because the wave-length of light is so minute, any relative change in the positions of the beams of light is instantly detectable because the interference fringes change. The sensitivity of the instrument is astounding. It would measure lengths or changes in length of less than a ten-millionth of an inch!

The interferometer was used in the Michelson-Morley experiment which showed that there was no substance as ether through which the Earth

previously had been assumed to push. The interferometer is also used in measuring the size of some of the nearer larger stars. In astronomy it is of extreme importance and value.

The interferometer is used in optical work and in fine mechanics for measuring small lengths, or rather for measuring any lengths very accurately. The standard meter bars and yardsticks of the world are checked with interferometers.

Thus from a trivial gadget like a half-silvered mirror a whole new technique in science is born.

IT IS common knowledge that the first nuclear fission was performed by Hahn and Strassman in 1939 at the University of Berlin, but the disruption of the atom dates back much further than this.

In fact, if you wish to carry it to its extremes; the first knowledge of atom-splitting at all came with the discovery of radioactivity by Madame Curie. But this was a natural phenomenon which could not be interrupted or varied by any man-made techniques.

The first case of atom-splitting, wherein man actually disrupted the nucleus of the atom through his own efforts, was that of Lord Rutherford, the great English physicist, back in 1919.

Rutherford reasoned that if he could subject the nucleus of some atom to a bombardment with some atomic particles, it should be possible to cause some sort of atomic reaction. He chose for his bombarding particles, alpha particles from a naturally radioactive substance. His apparatus was childishly simple compared with the monstrous and gigantic machines used today.

Opposite the radioactive substance and covering it, was an aluminum plate. And on the other side of the aluminum plate was a screen of fluorescent material. The whole system was enclosed in a vacuum. The original radioactive material was arranged in such a way that all the particles from it would embed themselves in the aluminum and none would penetrate through to affect the fluorescent screen. Thus, if no reaction occurred, the screen would remain dark, because the original radioactive material would be unable to affect it.

When Rutherford looked through a microscope at the fluorescent screen he saw it glowing with thousands of brilliant individual scintillations, indicating that the aluminum was throwing off particles itself. It was as he then knew, a case of induced radioactivity.

The alpha particles (helium nuclei) were striking the aluminum with such force as to knock out protons from the aluminum which in turn struck the fluorescent screen causing it to scintillate. Thus, theory became fact, in the twinkling of an eye.

Everyone knows, of course, what has happened since. But the amazing thing is the fact that like most great events in science, this stemmed from a comparatively simple experiment, just as the original discovery by Hahn and Strassman of

uranium fission did. No great equipment existed in their laboratories. The event occurred on a small but recognizable scale and from it appeared the great practical effects the whole world has seen. The Wilson cloud chamber, which has been discussed often, then made it possible for other effects in the atomic world to be seen.

Perhaps the great discoveries of the future are destined to come from the simple experiments of geniuses who are not confused by monstrous machines, but who are able to use that most important machine of all—the human brain!

THAT part of science which is known as theoretical physics, is undoubtedly the most fascinating branch of all science. It brings together many different elements. Most theoretical physicists are a combination of mathematician and physicist and their tools are not laboratories or instruments—but simply paper and pencil—not to mention, a brain.

Among the theoretical physicists of more recent times, the most famous is that of Einstein who gave us a new picture of the universe, the first truly correct one. Less well known but equally accomplished is the brilliant—was the brilliant—Sir Arthur Eddington.

This man was not too well known to the public, though some of his popularizations of physics have been best sellers—among them the famous "Nature of the Physical World." It is unfortunate that he is not better known for he has made some of the really great contributions to cosmic thinking.

Sir Arthur Eddington was a theoretical physicist who used the universe as his subject. A first rate writer, witty, talented, intelligent and well-educated, this erudite man, investigated or rather instituted investigations into the two extremes of physics, atomic theory and astrophysics.

On one hand we have macrophysics, the study of most matter on a large scale, stars, galaxies, relativity, non-Euclidean geometry and so on; on the other, we have microphysics, the study of atoms, electrons, protons and the building blocks of the universe.

Eddington attempted to unite these two diametrically opposite worlds into one. He did this by equating the expressions for energy in one to the energy in the other, and by so doing he was able to show the relationship between the quantum and the electron, to the size of the universe, to the vast number of objects or particles within it.

This vast undertaking is truly a gigantic tribute to the ability of the human mind. And Eddington was capable of doing it. To understand what is meant more fully, it is recommended that any person who is interested in these grandiose concepts, acquire two books by Eddington, "The Nature of the Physical World" and "Philosophy in Physics." Both are popularizations but not in the abused sense of the word. They are witty, intelligently written books without any attempt to

write down to the reader.

The concepts they present are staggering. It is almost inconceivable that a human mind is capable of devising theories of such magnitude, much less making them intelligible to ordinary non-technical persons. But Eddington succeeds.

Eddington points out that it is the amount of matter in the universe which determines the size of it—as Einstein has done—and knowing the curvature of the universe as well as other factors it is possible to predict the number of electrons in it. Eddington gives this number as something like ten to the sixty-fifth power!—or thereabouts. A cross check shows that this is undoubtedly true.

THE Amateur Astronomer has taken on almost a professional air. Some months ago this magazine ran a series of articles on amateur telescope making and the response, as denoted by numerous letters, was tremendous. Since it is estimated that there are thirty or forty thousand people in the country interested in this subject, it can be seen that astronomy has clearly taken a hold on its admirers.

In some respects amateur astronomers can be compared with radio amateurs. Both have contributed vastly to the professional field, and sometimes it is hard to draw the line between the professional and the amateur. Thus Porter, the most famous amateur, is really a professional now, and his services have been called for wherever telescopes are built.

The amateur astronomer is usually a person interested in doing fine mechanical work. At least, that is the case in the majority. However, great mechanical skill is not a prerequisite to building a reflecting telescope and enjoying it. Ability to read, patience, and some love of fine techniques and science is necessary.

The author, though not an amateur astronomer himself, has the good fortune to know several. One, in particular, has produced some instruments of professional perfection. He has constructed a twelve-inch reflecting telescope. Its tube is made of finely constructed aluminum sheet, carefully riveted and mounted rigidly on a concrete-steel assembly. Numerous attachments permit the 'scope to be used for astronomical photography. A specially designed electric motor and gear train allow the 'scope to be driven mechanically to follow the rotation of the earth.

The writer had the good fortune to look through the 'scope several times. It was his first experience peering through a telescope of that size. The view was astounding! The telescope was focused on Saturn which happened to be in a particularly favorable position for seeing that night. The air was still and the "seeing" was perfect. It is hard to convey the terrific impression that such a simple experience can convey. There was Saturn in all its glory, surrounded by its rings, and with some of its satellites clearly visible.

The only comparable astronomical thrill is a

first glimpse of the moon through a similarly powerful instrument. The sight is breathtaking and leaves one with a permanent impression.

On the same scale of interest, certain optical tests performed by this amateur, left the writer equally intrigued. There was the Foucault test where bumps on the telescope mirror are clearly seen even though they're only a few millionths of an inch high and are due only to the expansion caused by touching the glass with a finger.

It is strongly recommended that anyone who has an interest in amateur astronomy or who is a potential amateur astronomer, take a visit to some amateur astronomers. Two things will happen. He'll become a "telescopic nut" (as amateur astronomers like to call themselves) and he'll be a confirmed fan of science fiction to the end of his days. You can't see without speculating.

OF ALL the objects in the sky nothing is more intriguing than the comets. These strange celestial objects have been probably more the object of superstition than any other items. Ever since Man has made records, comets have been regarded as harbingers of death, ominous messengers doomed to foretell of horror and anguish.

All sorts of pseudo-scientific beliefs have sprung up about them. They are believed to be the cause of wars, and early observers regard them as sort of celestial fish wandering between the planets much as an ocean-denizen wanders among the rocks.

In a telescope, a comet is not usually a clearly defined object; it appears more as blob or blur of light, vague and hazy. When it approaches within range, a tail can be seen to exist, the tail being equally tenuous. Of course, the most curious facet of the comet is the fact that this tail is so airy, so gaseous, so vacuous, that it responds to light pressure and when the comet moves into our solar system the tail can clearly be seen to point away from the sun no matter what the relationship between the two. When the comet advances toward the sun, the tail streams to the rear. As the comet recedes from the sun, the tail precedes the comet's head.

This peculiar behavior of course is perfectly understood. The exact pressure of light against matter has been known for a long time. It is a simple matter to calculate the forces in which is demonstrated clearly the nebulousity of the comet's tail. A comet appears huge and it is, in terms of volume, but that volume is pure deception. The amount of matter in a comet is shown to be extremely slight by the fact that it is deflected from its course tremendous distances by all planetary attractions.

The vacuum of a comet's tail is a good deal better than the one found in most vacuum tubes! Nevertheless, there is a greater concentration of matter in a comet's tail than in empty space which is so close to a very perfect vacuum. The

light emitted by a comet and its tail seems to be a combination of reflected sunlight and possibly some sort of induced phosphorescence caused by sunlight impinging on the substance of which the comet is made.

Another curious and interesting fact about comets is this: once they were believed to have been extra-solar visitors. Now this is no longer believed. As we can calculate, most comets seem to be a part and parcel of our own solar system. While their periods are long—in the neighborhood of a thousand years—as astronomical time goes, this is but a minute.

Sometimes, as Jupiter has done, planets so influence comets that the planet becomes a focal center for the comet's activity. Jupiter has thus attracted something like forty of these ghostly visitors.

The breaking up of comets which is frequently observed, has so far been given no satisfactory explanation. Perhaps forces are involved about which we as yet know nothing.

IN SOME respects the ancients are to be admired and commended. At least their familiarity with the Heavens did not make them almost contemptuous of the glories over them, as ours has done. Just because we know what makes the Solar System tick we needn't lose our respect and admiration and awe for the so-called "wonders" of the heavens.

The earliest conceptions of the stars as simply lights or lamps in the sky, are trivial compared with what we know to be truly the case. To the ancients the Earth was the important thing. All else was considered of considerably less importance. Man was truly "geo-centric."

With the rise of the ancient Greeks, a serious scientific attempt to explain the sky was made and here the thoughtful men did not try to make Man the measure of everything. The Greeks realized that astronomy involved the application of mathematics and geometry to the facts that were observed. It is through such activity that we began to get a glimpse of the true nature of the universe before the cloak of darkness of medieval times settled upon civilization.

One of the strange facts about the ancient Greeks was their mixed nature. One moment you'd imagine them the soul of logic; the next, their beliefs would be ridiculous. Thus, Aristotle who knew the Earth was round and demonstrated it beautifully from a scientific standpoint, held the belief that the Earth was the center of the universe. Against such a mixture of wisdom and logic it is difficult to know whether to admire or deplore.

Finally, as we well know, the Ptolemaic system of the universe was evolved to explain the motion of the heavenly bodies. This system which we attribute to Ptolemy, a Greek astronomer who lived in Alexandria in about 150 A. D., was a complex explanation. It assumed that the earth

was the center of the universe around which all heavenly bodies revolved. That is, the bodies did not revolve directly. Instead, they revolved around a point which revolved around the earth. These epicycles, as they were called, did serve this much; they offered a geometric interpretation of the sometimes apparently strange motion of the heavenly bodies across the sky.

The Ptolemaic system lasted a long time—fourteen centuries to be exact. As more detailed knowledge was obtained of the motion of the sun and the moon and the stars, more elaborate theories of epicycles were compounded.

Finally the Ptolemaic system received the blow which was to break its back. A Latin book appeared, called "De Revolutionibus Orbium Coelestium" (On the Revolutions of the Celestial Orbs). This book was really a re-affirmation of the ancient theory of Pythagoras who held that the sun was the center of the solar system. Its author was a Polish astronomer, Nickolas Copernicus—thus the theory became the Copernican theory, and in its way it revolutionized the world more than all the generals and political leaders combined.

Copernicus was a student of medicine, but astronomy was his avocation. He used most of his time collecting data on the errors of the Ptolemaic system, and he worked like mad to supplant it with a more rational one, and one which fitted the facts more closely.

He finished his famous book in 1530, but waited for twelve years before he dared publish it. In fact, Copernicus was on his death bed when the book appeared.

His hesitation to publish was perfectly understandable. At that time the church had very severe laws designed to discourage heresy of that sort, and it was particularly strong against what it regarded as pseudo-science.

Copernicus did not actually see his own book. It is probably just as well, for one of his friends, thinking that the astronomer might offend the church—which was certainly the case—inserted a preface in the book, stating that the astronomer did not mean for his theory to be taken seriously; that it was merely a mental plaything!

For a long while, the Copernican theory had no effect on the world. The Ptolemaic system was still taught and it was regarded as the font of astronomical knowledge.

Three men whose names are familiar to every civilized person in the world, found in the book a source of strength and knowledge and they proceeded to broadcast it with a vengeance. They were Tycho Brahe, Johann Kepler and Galileo Galilei.

And so it remained for men long after Copernicus' death, men unknown to him, to give his book the hearing it deserved. It is one of the landmarks of the scientific method as well as astronomy in general.

THE END

THE BRIGHTEST JEWEL

By
CARTER T. WAINWRIGHT

★ **U**SUALLY when the name of some great person is mentioned, there can be found at least someone who will disagree with it. But in the field of science, particularly in one case, this is not true. The greatest single scientist who ever lived, is without question, Sir Isaac Newton.

The inscription carved into his tomb in Westminster is fitting and unexaggerated as well as being beautifully phrased. It goes: "Let mortals rejoice that there has existed such and so great an ornament of the human race."

The science of astronomy knows the name of Newton well. Kepler, the famous German astronomer, had set forth a description of the elliptical motion of the planets of the Solar System, but never did he pretend for one moment to understand what motivated them. It remained for Newton, in his famous "Principia," to do that.

Newton, under the tutelage of an uncle—his father died while he was still a child—was intended for the farm. Fortunately the uncle sent him back to Cambridge after withdrawing him once, and before he was twenty-one, Newton was making a name for himself in mathematics. It is not necessary to discuss Newton of calculus fame or Newton of optics fame. Purely in physical astronomy are we interested in Newton's path. Because Cambridge closed during the Great Plague, Newton spent most of his time then at his home in Lincolnshire. And his speculations upon astronomy began. Familiar with Kepler's work, he wondered what drove the planets in their eternal paths about the sun. The notion of gravity occurred to him with its force as the product of the masses and inversely as the square of the distance. Whether the falling apple had anything to do with this, we do not truly know. Regardless, he proceeded to calculate the gravitational relation between the Earth and the Moon. To his disappointment and astonishment he found that his theory would not work. Unknown to him, the distance he used for the Earth to the Moon was very wrong and his calculations were naturally awry. Accepting the inevitable, he set his work aside and didn't return to it for sixteen years. But then—

A French scientist determined the true size of the Earth and the Moon-Earth distance. Newton heard of this and his interest in his old work revived. Using his earlier work as a starter, he wrote the famous book, "The Principia." Under intense concentration and laboring ceaselessly, barely allowing himself time to eat, he ground out the massive intellectual achievement in about

two years.

When he finished the work, it was a sound and genius-created description in mathematical terms, of the universe. But then he put it away instead of publishing at once as should have been done. He had had some experience with previous publications in optics in his earlier years, when he became embroiled in several bitter arguments. This had cured him. He wanted no more of it and so decided he'd forget about it until after his death.

But gravitation was in the air. The scientist Halley mentioned to Newton that everyone was discussing the problem of planetary forces and looking for a solution. When Newton explained to him that he had already solved the problem, Halley was shocked. He demanded Newton publish his work, which, reluctantly, the scientist did. Its impact was tremendous in spite of the fact that Halley had to finance a good portion of the printing bill. "The Principia" became a sensation over night. Nothing is quite comparable with it except perhaps the astonishment created by the announcement of the Einstein theory.

The universal law of gravitation was clearly stated. A logical train of reasoning showed that the planets must move exactly as they do, because of the force of gravitation. The knowledge that gravitation was universal, extending from the smallest atom to the largest star, unified all the concepts of physical science. The world had been remade.

One facet of the work was that it showed astronomers how the mass of a planet could be calculated by observing the distortions of its orbit by other planets or by satellite. Similarly the sun's mass could be reckoned from the knowledge of a planet's mass and speed.

This general tool enabled the universe to be described and understood. Strictly speaking, Newton's explanation of gravity was not really an explanation. It was purely a descriptive law, which fitted the facts. It remained for Newton's successor, the great Albert Einstein, to supplement the theory and to give us a clearer physical picture of the nature of gravitation. Newton's work inspired a host of European scientists, particularly the French equivalents of Newton, Laplace and Lagrange.

The world is richer for Isaac Newton. If he had done nothing but his work on gravitation, he would be considered the world's greatest. But he did so much in mathematics and physical optics that it is incredible that so much genius could exist in one single man. Hail, Newton!

PLANT vs. ANIMAL

VISCOUS cellular protoplasm takes many forms. There are two major subdivisions. While biologists and botanists have succeeded in classifying innumerable forms of life, there appears to be an endless variety. No one can say just how many types there are but it appears that there are approximately three-hundred thousand specimens of plant life. The animal world exhibits even greater differences with about seven hundred thousand specimens. The majority of these are insects, crawling multitudinous insects whose numbers are endless.

The business of separating animal from plant life is not as obvious as it seems. There are divisions of both which have the characteristics and properties of both. Thus to call a plant an animal is more than common.

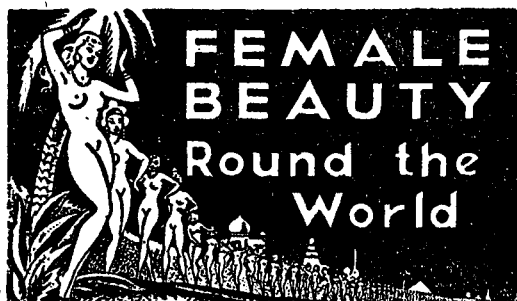
The distinctions between animals and plants bogs down at the lowest levels of life. Relatively well-organized creatures whose nervous systems are of the higher type are easy to distinguish. For example, simple one-celled bacteria are almost always classified as plants—but . . . there are some authorities who would put them in the animal range.

The ability to move might be considered a successful criterion. This is not so. There are certain plants which are mobile—while some animals are rooted to the spot, the oyster being the best example of this.

Fortunately there is one method of distinguishing plants from animals, which, generally speaking is pretty efficient. This refers to the different chemical levels on which they feed. Plants are capable of existing on the low chemical level in which they extract their nourishment directly from the carbon dioxide of the air and the energy furnished by sunlight. A few plants, bacteria and fungi, obtain their food as parasites do, from dead organic matter or from living plants.

But animals are another thing. Their metabolisms require foods very complex, made up of proteins and carbohydrates and fats. Animals tend to use up their "credit" so to speak, faster than they can reproduce it. But plants produce a surplus of food. Thus the apparent greater abundance of plants.

While intelligence is not a characteristic of all animals, it is of no plants. It is interesting to speculate if any kind of a plant is capable of being stimulated into developing an independent brain. This remote and far-fetched idea has been the subject of numerous fantasies mostly about fly-trapping plants which somehow were endowed with a malignant brain. Meat-eating plants are a rarity and as much as we like to imagine the impossible happening, we can't have much hope for ever discovering such an amazing event. Plants are on too low a level of every type of organization—nervous to physical.—R. Dee.



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WHAT IS LIFE?

By

★ ARTURO TUSCAN RYAN ★

OF ALL the questions man has asked himself, this is undoubtedly the most profound and the deepest of all. For it is a question which some men believe will never be answered. Others more optimistic say it will, but . . .

Even to give a definition of life is hard and no one definition will satisfy everyone. G. H. Lewis, the famous chemist said: "Life is a series of definite and successive changes both in structure and in composition which take place in an individual without destroying its identity." This seems sound, at least as clear as any yet given. It is hard to think of anything but a living organism to which the preceding definition applies.

There are two general attitudes toward life which have been held by various biologists and philosophers. One is the vitalistic view which holds that living things contain some unknown principle or element not a part of the non-living or inorganic world. The other, the mechanists, maintain that there is nothing in life which cannot be explained on the basis of physical and chemical laws.

The attitude of the mechanists is the principle on which biologists operate whether they believe in it as truth or not. It is the pragmatists approach. If the mechanistic view was not held, little would be accomplished. Nevertheless, while mechanism may be a fine and necessary working principle, it is becoming less tenable as a philosophical belief, principally because of recent advances in physics which tend to point to a limit to our knowledge and understanding of phenomena. Fortunately the pragmatic mechanistic approach to biology yields much useful and interesting information. It has shown that there is a very definite substance, common to all living matter, be it a weed or plant, or be it a worm or man. This substance is protoplasm, a Greek word meaning "first-form" an appropriate name for the basic stuff of all life and living things.

Protoplasm is, chemically, a carbohydrate, a substance composed of carbon and hydrogen and oxygen. Included in protoplasm are various minute quantities of iron and phosphorus, copper and magnesium, calcium and chlorine, and a host of other elements, without which protoplasm is never found. Even though these additional elements seem insignificant in quantity, they are a necessary part of protoplasmic substances. The viscous, jelly-like material which constitutes protoplasm, the complex colloidal cellular structure,

is to a great degree governed by the salty solutions discussed above.

Protoplasm is always changing, always responding to its environment. This response, this feeding, excreting, living, is called its "metabolism." Part of the change of protoplasm is the ability to grow. And above all, that characteristic of protoplasm, which so radically differentiates it from inorganic matter is its ability to reproduce, to refashion itself, to recreate and reform into children-matter from parent stuff.

Another outstanding fact about protoplasmic life-matter is its amazing ability to modify itself to fit its environment. This adaptability generally works in such a manner as to make the reaction of protoplasm favorable to its realm. That quality is never found in anything but living matter. Just as in physics, there are fundamental building blocks, the "elementary particles," so in biology, are there nature's basic structural elements, the cells. Protoplasm is always organized into these basic units of life.

The cell, able to reproduce itself, transmitting as it does chromosomes from parent to daughter, is the true marvel of all time. The most complex ingenious electrical and mechanical creations of Man seem as the veriest elementary toys before these astonishing wonders.

Every biologist, be he a mechanist or a vitalist, or having these philosophical beliefs at least, somewhere within his being dreams of the possibility, no matter how remote, of some day creating or duplicating life.

If, as the church would have us believe, this is a God-given power, capable only of being done by Him, then, such hopes are futile. But regardless, we all nurture within us the secret hope, if not belief, that as physicists and chemists and biologists probe further and further into the secrets of atom and star, chromosome and cell, they may, somehow stumble upon the power that causes living things to differ from non-living things.

And perhaps it is not too much to hope for. It is not our purpose to imply that this will ever be done. Perhaps it cannot. But Man has made such wonders, has done such extraordinary things, that it is hard to put a limitation upon his abilities. Yet, that limitation may exist. From his present abuse of the fruits of science, man's misuse of such ability would appear to be almost certain. Maybe it's just as well he never attains such power.

"HAMS" AT WORK

By
KEN SEVERIN

IN NO field of amateur scientific activity has more usefulness and skill been shown than in amateur radio. It is no secret that the radio amateurs of this country provided the United States during the second World War with a nucleus of highly skilled, reliable intelligent radio technicians who made U. S. Army, Navy and Air Force radio and radar what it became. In their way, radio "hams" contributed more than their share to the war effort. It is easy to trace a familiar pattern in their work.

World War I brought radio out of the laboratory and into the field. After the war many thousands of men engaged in the new science and found it fascinating. Thus organized amateur radio was born and it helped to bring understanding to peoples all over the world through its free communications. Amateurs of all nations engaged in the art, but the U. S. led the field. This was the case, mainly, not because the U. S. had more money or richer people, or better equipment, but because our government exercised the minimum supervision over radio amateurs. Our government encouraged the development of amateur radio. And so by the time the second World War rolled around there were several hundred thousand young men who had more than a speaking acquaintance with radio.

To top it off, amateurs had developed a lot of the scientific end of radio. The short waves were pioneered by hams; various antenna systems were born in hams' minds. Hams contributed much to the whole technological picture. It is educational to notice that Germany and Italy and Japan and Russia were the first to put heavy restrictions on ham activity. But amateur radio only thrives in a free country.

When the war broke out, again hams volunteered their services. They served long and honorably in many capacities, not the least of which was as trainers to provide the thousands and thousands of trained radio operators and mechanics. When radar needed men, hams were among the first to be selected. Hams contributed much to the radar art.

Now that the war is over we can see a familiar picture resuming. Ham activity is at its height. The Amateur Radio Relay League, that fine organization of U. S. amateurs, has fought the FCC tooth and nail to give hams their deserved status in assuming frequency bands which they wish. The government has thrown millions of dollars worth of war surplus equipment on the open market for a minute fraction of its original cost. Thus hams can work with some of the finest material. Furthermore, they can get the latest in

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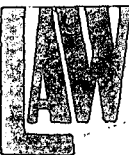
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technological developments and use these gifts in their own research.

And so, once more, amateurs are in the forefront of pioneering. Mobile communications have been given an enormous boost by ham workers. Television has received sound amateur study. Radar is being played with by amateurs. And above all, the super high frequency bands are being thoroughly explored by amateurs who want to know it as well as they know their old familiar ten and twenty meter bands.

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An embryo organization or group of organizations is the various rocket societies one finds. These outfits, incapable of doing much experimentally yet, at least serve the useful function of propagandizing the country into awareness of the necessity for supporting rocket activity. Perhaps someday rocketry will be established on a basis wherein an amateur group can engage.

In spite of dictatorship propaganda to the contrary, the real strength, both industrially and morally, of a nation, lies in its private citizens, not alone its organized laboratories and industries. That is why our country is so strong.

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In no little measure, in radio, in automotive work, in astronomy, and in a hundred other activities, American amateurs are ploughing steadily ahead, knowing that no matter how humble their work appears, it is serving a useful purpose. Encourage the amateur!

PALOMAR TROUBLES

By I. MAJERQUE

THOSE of us who have been looking forward with great interest to the actual operation of the Mount Palomar telescope are due for a postponement of that pleasant task. But it won't be more than a matter of about six months before the monstrous eye is once more functioning.

When the huge reflecting mirror was designed, it was anticipated that there would be a good deal of distortion and sagging when it was set into its holder. Such a vast weight of glass was bound to sag under its own heaviness.

Efforts were made to provide for this distortion. Special supporting cells were designed to supply adequate even support, but when the mirror was installed and tested, it was found that the sag was less than expected, particularly around the outer edges.

Only one thing can be done about this. Those outer edges must be repolished and some of the glass removed. A mere twenty-millionths of an inch of glass from an 18-inch outer annular ring must be removed. This delicate process will require the setting up of almost as elaborate an optical shop as existed at the California Institute of Technology where the mirror was originally ground.

Once the correction is made it is believed that no further difficulties will be encountered and that the instrument will be ready for technical observations within about six months. But that's still too long for a real telescopic nut!

NOSY ASTRONOMER

By U. ARTEAUX

THE newspapers have been hot lately with news that the French are operating an atomic pile in a Parisian suburb, and they've been drawing dire implications from it. It is true that the pile's operation is directed by the noted Communistic scientist, Dr. Joliot-Curie,

and that he is very friendly to the Soviet beliefs. This need cause no alarm.

To begin with, the development of an atomic pile is no longer a difficult thing, and any nation willing to spend a little effort can do it. Furthermore, it is a long step from a pile to a bomb. Without question the Russians, with the aid of some fine physicists of their own, plus numerous German scientists they've captured, must have atomic pile equipment in action. Again it is doubtful whether they've yet gotten the bomb.

Joliot-Curie is an unusual case. He is admittedly one of the world's great physicists. It must be remembered that he and his wife received the Nobel prize back in thirty-four for their discovery of artificial radioactivity. Furthermore, he has been allotted excellent facilities. This combination was bound to produce the atomic pile. We may suspect that other countries, possibly Sweden and Switzerland too have been running atomic piles. If these countries can do it, the Soviets must have done it.

It is a certainty that eventually the Russians will have the Bomb. Therefore, there is no point in losing any sleep over the French development.

MEDICAL SUPERSTITIONS

By
LEE LEADBEATER

OF ALL the sciences, medicine seems to be the strangest mixture of quackery and honesty. Even the most primitive medical practitioners alleviated the hurts and pains of the ill to a certain extent and the weird brews and potions they concocted, did, by sheer chance, help in minimizing human suffering.

But until a few hundred years ago, medical ideas were such a compound of idiocy and stupidity that it is hard for us to believe that in that same time, other sciences were making great strides. It is pointed out that the idea that each type of creature has a permanent anatomy—such an obvious fact—and it is unaltered and unchangeable, seems to have been only a recent innovation of the last few centuries.

The eminent authority Brewster says, that if we had been living a few hundred years ago, we might possibly have been asked on a jury to hear some testimony claiming that a woman had turned herself into a black cat and was caught wriggling through a keyhole!

Werewolves and skin-changers were accepted forms of human types not only believed in but also noted in the legal forms of the time. As late as 1782, a witch was tried and burnt in Switzer-

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land, and laws against sorcery persisted even longer. Where creatures were concerned, ideas were far from scientific. Spontaneous generation was believed in, and many thought that animals sprang out of the ooze and mud. Disease was invariably the work of devils or sorcerers, or malignant gods. That biology and medicine could have even advanced a little against this monstrous pot-pourri of mysticism is incredible in itself.

Fortunately, because so much work was done, successful medical principles were developed, particularly in crude surgery. A knowledge of the actual functions of the various parts and organs of the body was practically non-existent. The practice of sacrifice, both of men and animals brought forth a good deal of intelligence on the structure of living creatures though rarely did this knowledge assist in a practical way.

It is known that the cave-men performed operations even more skillful than their successors, so-called civilized man. Excellent specimens of the difficult operation of trepanning, wherein the skull is entered, have been found. In Central America, primitive Indian groups have removed brain tumors, etc., with surprisingly efficient tools.

The early Greeks did a surprising amount of sound medical work though not without error. The Romans did some too. But then the curtain of the Middle Ages descended on the world and very little was accomplished. As is well known, during this period, the concentration was upon the ancient authorities without recourse to experiment and industry itself.

During the glorious Renaissance men once more painfully began their researches and it is in the sixteenth century that we find modern medicine slowly awakening under the famous tutelage of Vesalius, the Belgian. He published a text on anatomy that today is regarded as a work of art as well as science, but like his contemporaries, it was received with less than enthusiasm by the medical men of the time.

Medicine struggled ahead slowly, but until recently it never lost the strong blend of superstition and fact that surrounded it.

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TECHNOLOGICAL miracles are happening so fast it is almost impossible to keep up with them. But we can make a good try. And go nuts in the trying. Now somebody comes along and introduces about the first radical innovation in printing that has ever occurred. It's radical for two reasons: one, it doesn't use wet ink; two, it involves static electricity!

The method is comparatively simple. It is called zerography from the Greek "zero" meaning dry and "graphos" meaning to write. It also involves photosensitive substances.

The zeroplate is made up of a conducting material faced with a non-conducting photo-electric substance much like a photographic plate. The coated material is then given a uniform positive electric charge by passing it over a charged wire. The plate is then exposed to light which impresses the desired image—it may be type or a photo or whatever is to be printed—and the charged coated material discharges to the backing plate leaving the unexposed areas still charged. This effectively leaves a picture of the image in electricity on the coated surface. Then a negatively charged powder is sifted over the coated plate. Some of the powder clings to the charged portions of the plate while the excess runs off.

The result is that the image then appears in reversed form, of course, in powder, on this sensitized plate. Now all that remains is to place a piece of paper almost touching, but not quite, the plate. The paper is given a positive charge. Bingo—the powder jumps from the plate to the paper. The paper would now be easily smudged. This must be prevented. The powdered ink, which is a resinous material, melts as the paper is heated gently and the image is fixed to the paper. The end-product is a neat piece of printing.

As described, the impression is given that the method is slow. This is not so. It is as fast as the newspaper rotary presses which turn out printed material in such vast volumes. High voltages are necessary but low currents. It is practical and simple and neat. Furthermore, it is a dry process involving no smudgy inks or messy solutions. It is the answer to the printer's prayers.

Among its many advantages is the fact that this gadget can print on practically any kind of a surface—not necessarily paper. Possibly it will displace the conventional lithography. Primarily, however, its advantages lie in that all-important fetish that is gripping modern industry—automaticity. This magazine has had a great deal to say on the subject recently and for good reason. Everywhere machines are being developed to function in a much superior manner to crude and slow handwork. Perhaps we will reach the point predicted by the famous mathematician, Norbert Wiener, who said that the time is coming when civilization will no longer require the services of the mediocre, when it will be hardly possible for a man of average attainments to have anything to offer which is worthwhile to buy.

Of course, brains will always be at a premium. Even zerography cannot replace them nor can all the automatic machines in the world do anything better than the human brain—in a genius!

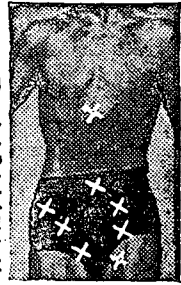
THIS GLORIOUS FOLLY

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genius who accomplished so much in his lifetime and to whom we're indebted for supplying us with the realization that man can manipulate his own environment with the aid of reason, deserves to have his life recounted in detail.

Disregarding Galileo Galilei's contribution to general physics with the pendulum, the inclined plane, acceleration, etc., and looking purely at his offerings in the noble field of astronomy, we can take a measure of the man's greatness.

We do not know exactly how Galileo first heard of Jan Lippershey's invention of the telescope, but in any event it came to the experimenter-theoretician's attention and with his almost child-like, naive curiosity, he fashioned a similar instrument for himself from a pair of lenses.

By modern standards Galileo's telescope was a pitifully crude and primitive instrument with which to fashion universes, but even toys in the hands of geniuses are tools.

Until Galileo turned his elementary spyglass (which was all the telescope really was) no man had seen more in the sky than his naked eyes would show him. Galileo changed this. He opened the windows of the universe and invited man to see its wonders. Until then the stone-age men had seen as much in the heavens as had the loftiest scientist of Galileo's native Florence.

Even Galileo was surprised—astonished is the better word.

We take the mountains of the Moon for granted. Imagine how Galileo was to feel when he discovered the craters and the plains, the barren sea-beds and the mountains! Miracle of miracles, that oft-observed Venus exhibited phases just as did the Moon! Then to pile Pelion upon Ossa, monstrous Jupiter was revealed to be encircled by satellites even as was the Earth! Was there no end to the revelations of the new telescope?

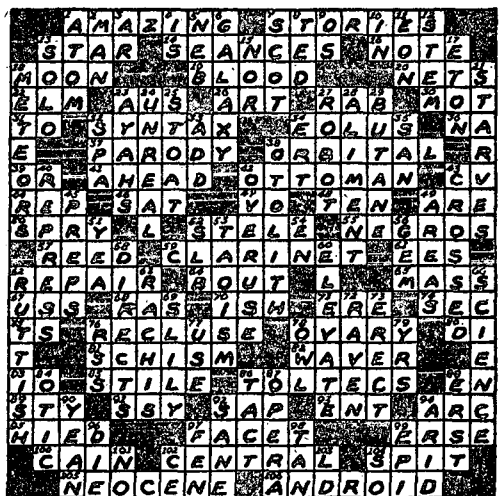
And yet, when Galileo spoke of these wonders to his fellow members of the faculty of the University of Padua they refused even to look through the telescope much less to believe Galileo's word. The nature of the professors is not so different from many similar type who live today. Galileo

wrote a letter to the great German astronomer Kepler, a letter describing his cohorts so well and so amusingly that it is worth repeating.

"Oh, my dear Kepler," Galileo began, "how I wish that we could have one hearty laugh together! Here, at Padua is the principal professor of philosophy, whom I have urged repeatedly and requested urgently to look at the moon and planets through my glass, which he pertinaciously refuses to do. Why are you not here? What shouts of laughter we should have at this glorious folly!"

How well that describes the attitude of the seers and the men of learning of the time. And yet, as heartily as Galileo wished to laugh, he dared not. The long shadow of the Holy Inquisition hung over Europe and a short while before the philosopher Giordan Bruno had been burned at the stake. So, in a way, it was not as much of a laughing matter as Galileo liked to think.

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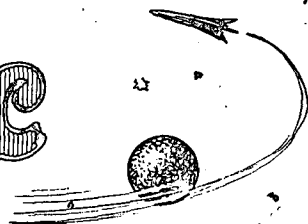
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